

the American Perfumer and ESSENTIAL OIL REVIEW

COSMETICS · SOAPS · FLAVORS

EST. 1906

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& Essential Oil Review

Editorial Comment

Paper Continues to Be a Critical Problem

Whether we feel that we are individually doing everything potentially possible or not in paper conservation, we are discovering that we are getting some unsolicited help from the Government in our efforts. Of course, we can appreciate the advisability of having an impartial arbiter, for regardless of our recognition of necessities it just isn't human nature for us to individually adopt a practice which may be against our individual interest. When the lid is clamped on all of us impartially the pill isn't so bitter to take.

Certainly Washington is doing its part for a volume of orders is coming out with the purpose of conserving paper. One of the latest of these orders has to do with folding and set-up boxes for, among other purposes, the packaging of gift sets.

While the program of paper salvage may be spotty nationally, as we have heard, it appears to be well organized in New York. Here the practice is being followed of assigning one big building to an individual who visits each tenant periodically to make sure that no paper is being neglected.

Are Your Post-War Plans Made?

If you aren't definitely set now on what you plan doing to fully utilize your potentialities once restrictions are removed, you are pretty sure of missing the band wagon. Great Britain has done it, and Canada has done it, and many of our more nimble-footed brethren here in the United States are likewise solidly bulwarked behind carefully thought out plans.

The expert, as typified by Winston Churchill, and the not so expert, who shall remain nameless, have given us to understand that the war with Germany will be over in a matter of from weeks to as much as six months; and that the war with Japan will take slightly longer. But whatever prophet you believe, the time is short. There are going to be war casualties . . . make sure you aren't one!

August, 1944 27



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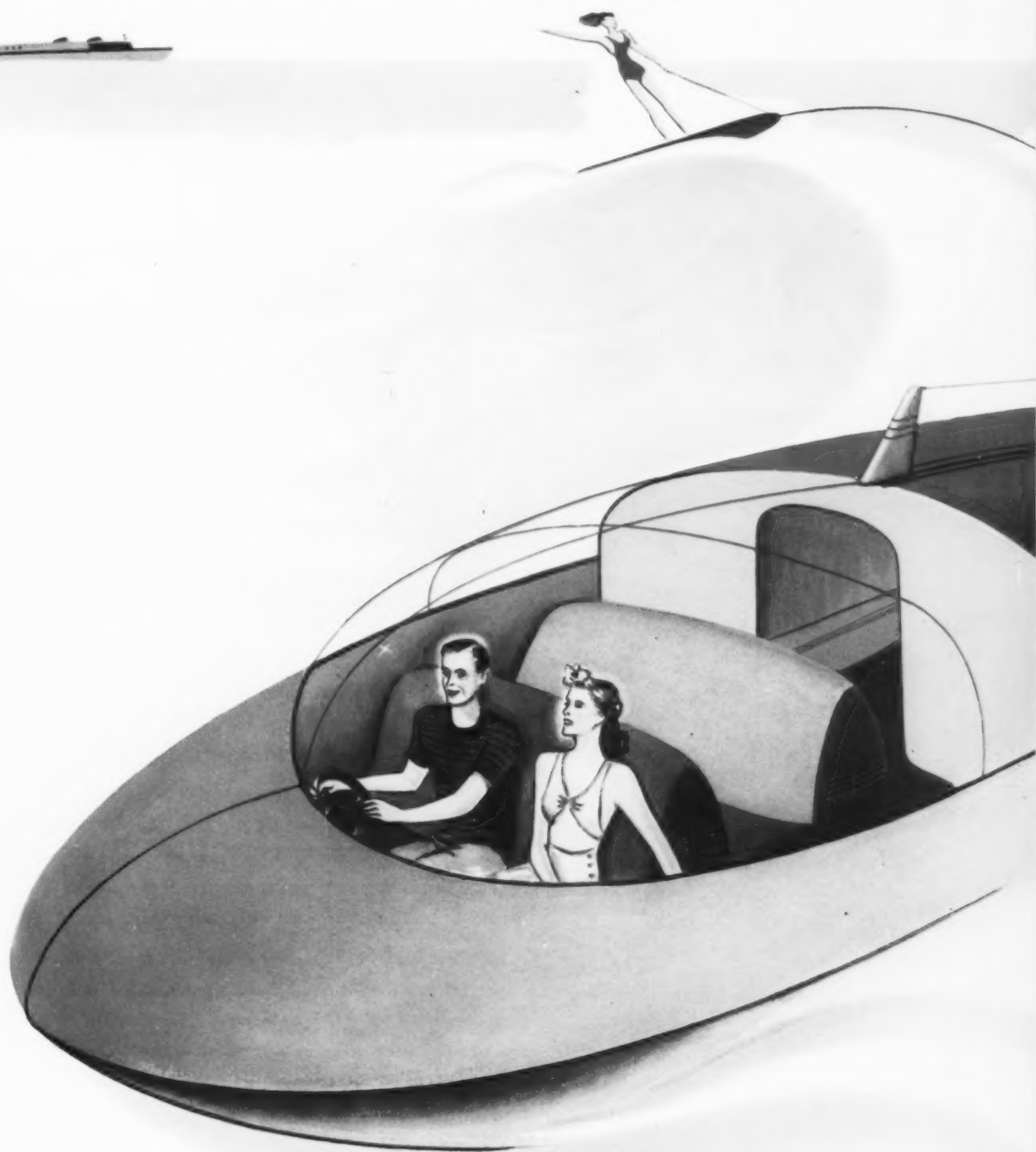
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*Odor appeal, as always, will determine whose shall
be the great names in post-war perfumery and cosmetics*



Let modern creative aromatics... by ALBERT **Verley** & COMPANY
...help your name to lead all the rest

Turn the page

Albert Verley & Company suggests:



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aromatics . . . that wins lifelong admiration.*

In the thrill of developing new, fascinating forms of presentation, it is easy to overlook the obvious fact that odor appeal is, and always has been, the foundation of the perfume and cosmetics industry . . . that great businesses have been built upon great odors, and always will be.

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desiderata

*Comment on interesting new chemical developments
and their application to cosmetics and toiletries*

by MAISON G. DENAVARRE

HEAT SENSITIVE PAINTS

Now that the military have found much use for heat sensitive paints, watch for a big spurt in civilian applications. In the cosmetic industry such paints could be used in batch kettles, fillers and elsewhere—any place that temperature played an important part. The paints are quite sensitive to changing from say bright red to black within a range of about 10 F. If a tank were painted with this paint, a quick glance would disclose the temperature, for the change from red to black is not easy to miss. You can imagine countless other applications on machine parts, hot and cold lines, and many others.

ALGAE ODORS

Algae are those small forms of vegetable life found in ponds and other stationary water pools. Some are also found in running water streams. The algae produce a variety of odors, such as fishy, earthy and so on. It might be an interesting research project at some university if this subject were further investigated. The mosses (oakmoss, pulmonaria, etc.) are already used for their characteristic odor. Maybe the algae have some possibilities in perfumery, too. They would be easier to gather in some respects than oakmoss.

EMULSIONS

Unorthodox practices will do much to advance the art and science of emulsification. Already it is possible to make more stable emulsions of water-in-oil by simple agitation than by homogenizing. It never made sense to use opposite types of emulsifiers in the same emulsion. Yet by doing so, you can sometimes save on

one operation. This may not apply to all emulsions. But from my own experience, it is found to be quite generally applicable. Thus, traces of polyvalent ions such as calcium and magnesium in oil-in-water emulsions seem to aid stability. Traces of monovalent ions such as sodium in water-in-oil emulsions aid in quicker emulsion formation with an increase in stability. Higher alcohols such as cetyl alcohol are stabilizers for each type—depending on how they are used. Wetting agents, too, give interesting and unexpected results, in both types of emulsions. The variations are many.

ALCOHOL ANTICIPATION

Iron man Bennett, W.P.B. alcohol administrator, certainly showed the stuff he was made of in fixing it so you, and you, and you could get an advance on your 4th quarter alcohol in the 3rd quarter, to enable you to get Christmas merchandise out by October 1st, at the same time using high school and college kids to manufacture during the summer vacation. Wonder who got the ball started? There will be many unsung heroes of this war, and not least among them will be the alcohol administrator at W.P.B.

COLD HAIR WAVING

Already new stuff is taking the place of thioglycollates, although I can't talk about it yet. Peroxide is washed up as a "stopper," while chlorates, and other halogenates, are looking up. Some are getting by with only citric or tartaric acid to arrest action of thioglycollates. In cold waving, the third, fourth and fifth wave is what counts. Also, how does the client react? Is she acquiring



M. G. DeNavarre at work in his laboratory

hypersensitivity? Already one case of acquired hypersensitivity to thioglycollates is reported in medical literature. In this going to be another p-phenylenediamine episode? It is a grave responsibility that is facing the industry. Do not treat it lightly. Too many are doing that now.

POST-WAR

Planning your post-war activities is a combination of many things. You should have new products completed from the research angle. The ingredients should be on order. The bottles, labels, etc., including the equipment, should be on order, so that the moment restrictions are eased you can get going.

The post-war period should be all planned *now*. Not *after* the war! Many are doing much talking, but a lot fewer are doing any planning.

That was the sum essence of the ideas of the Canadians at their Toilet Goods Manufacturers' Convention at Quebec. Get the thing in its final shape now—not later. In fact, practically all war restrictions on the industry in Canada are now removed, or placed on the supplier and not the manufacturer—like lanolin is handled here. The Canadians are not going to be caught with large stocks of war materials if they can help it. Indeed the U. S. looks like good hunting for many expanding cosmetic companies. Better watch out.

ANTIPERSPIRANTS

Powder antiperspirants have never been successful. No one knows the



WHAT IS

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IN A COLLAPSIBLE TUBE..

it is the ability to protect, preserve, OUTLAST its contents by a wide margin of safety.

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reason for it. Creams dry out, get hunks of crystals in them. Liquids remain the old standby, with sticks trying to do a volume too. But I think you will find a lot of folks are changing to liquids who are disgusted with dry-caked creams. Know

what that means? You better have a safe, easily applied unit. It should have all of the virtues of cream and none of the drawbacks. If properly formulated, it will work better than a cream. Try it and see if I'm not right.

several subsequent issues, has described the mode of using deodorized carbons with isopropyl alcohol, and we suggest that you read these over again. In any event, best results are obtained when the alcohol is diluted with water. Do not heat over an open flame, and filter immediately upon cooling.

Questions and Answers

510 CREAM SHAMPOO

Q: Please send us the following formulas: cream shampoo, cream permanent wave solution, dandruff removing hair tonic without alcohol.

J. D.—KANSAS

A: Cream shampoo can be made very nicely from ordinary shampoo by simply reducing the water. To make the product opaque, add one of the following ingredients: lanolin, spermaceti, higher alcohols, propylene glycol stearate, mineral oil or petrolatum. A cream permanent wave solution is simply made by adding self emulsifying permanent wave oil to the solution itself. We are sending you the name of a supplier of such material. The dandruff removing tonic without alcohol is sort of a phony. No tonic will remove dandruff except by mechanical means. It may relieve the itching associated with dandruff or may hold the dandruff scales down on the scalp, but that is all it can do. For this purpose a water soluble oil is used along with perfume and any other ingredients that you may like to add, such as pilocarpine hydrochloride, resorcinol or some antiseptic.

511 INSECT REPELLENT

Q: In the Q and A Department of a recent issue of THE AMERICAN PERFUMER (number 486) you mention an insect repellent which can be used in creams and lotions. We would be grateful if you would send us the name of the manufacturer too and give us any other advice. We are enclosing a self-addressed stamped envelope for your convenience.

H. V.—DELAWARE

A: The insect repellent mentioned to enquirer No. 486 is now completely unavailable. Nevertheless, we will send you the suppliers name under separate cover. In due course THE

AMERICAN PERFUMER expects to run an article on this subject which will appear far enough in advance of the time when good insect repellents will be available so that its readers can carry on experimental work and be ready for the post-war market.

512 WETTING AGENT

Q: We are making a powdered hand soap containing modified soda ash, soap, borax and wetting agent. On account of the scarcity of soap we use the wetting agent to replace part of the soap. The resulting product does not work out well, besides having a tendency to cake in the container. It does not suds up enough. Can you suggest anything to improve these conditions?

S. C. C.—OHIO

A: Only a few of the wetting agents, so-called, will lather to any extent in the presence of modified soda ash and soap. The one you are now using is fair at best. We are suggesting one to you under separate cover which you might try. Of course, you know that all the good wetting agents are practically unobtainable in dry form. The product we are suggesting to you does not seem to cake in the presence of soda and phosphate mixtures.

513 DEODORIZED CARBONS

Q: I am requesting the name of the carbon used and also the best brand of isopropyl alcohol mentioned in previous issues of THE AMERICAN PERFUMER.

E. D. S.—PENNSYLVANIA

A: Under separate cover we are sending you the names of the two major suppliers of deodorizing carbon together with the name of the supplier of the deodorized isopropyl alcohol. THE AMERICAN PERFUMER, starting with the October issue and

514 FILTERING MEDIA

Q: I noticed in the December issue of THE AMERICAN PERFUMER the remarks regarding filtering solutions that will react with the filter aid. I am making a lotion using resorcinol monoacetate, and I notice that when I filter through magnesia the filtrate turns dark red. What kind of filtering media do you suggest we use?

S. K.—ALABAMA

A: You should use an inert material of which purified diatomaceous earth is one. There are several trade names for this material, and there are a number of varieties available. We are sending you the names of the suppliers under separate cover, and would suggest that you tell them what you want to achieve. In this way, they can suggest the best filter aid they make. At no time should magnesia be used with materials that might react with it, such as the ingredient you are using.

515 BUFFERING OF ALUMINUM SALTS

Q: In the February issue of THE AMERICAN PERFUMER you suggest using aluminum sulfate or chloride 15% in an antiseptic cream, suitably buffered. Please suggest how to buffer this so it will not lose its effectiveness. In a formula like No. 64 in The Chemistry and Manufacture of Cosmetics, why would it not be more effective to include some antiseptic which would function if the antiperspirant failed to work? Why not something like Zephiran or methylparahydroxy benzoate?

L. E. W.—WISCONSIN

A: Zephiran would be inactivated by the sodium lauryl sulfate present in formula No. 64 because it is a cationic substance while sodium lauryl sulfate is anionic. In addition, it is unnecessary to have an antiseptic in the presence of strong astringents, such as aluminum sulfate or chloride. A buffer is used in these creams to prevent the rotting of cloth.

Parmantheme



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Review of New Law Suits

by LEO T. PARKER

Attorney at Law, Cincinnati, Ohio

DURING the past few weeks and months the higher courts, in different localities, have rendered many important decisions, each of which involves some distinctive feature of peculiar law informative to our readers. Quite obviously knowledge of these modern decisions will enable readers to avoid expensive litigations. Also, in event of unavoidable suits these hereinafter cited new cases may be advantageously utilized to win favorable verdicts.

STATE PRICE LAW HELD VALID

Recently, considerable controversy has arisen over the question: Are state ceiling price laws rendered void by the Federal price regulation law? The answer to this question is: State laws which do not directly conflict with Federal laws and regulations remain valid and effective.

For illustration, in *Helena Rubinstein, Inc., v. Charline's Cut Rate, Inc.*, 36 Atl. (2d) 910, reported May, 1944, it was shown that a company's business is the marketing of cosmetics and beauty preparations under its own trade marks and brands. The manufacturer filed suit against a cut rate drug company in New Jersey charging "unfair competition" and asked the court to prevent the drug company from selling its products below minimum resale prices fixed by contract with other retailers. This suit was based upon the New Jersey State law.

During the trial the testimony disclosed that the State of New Jersey had passed what was popularly known as the "Fair Trade Act." This state law stipulated ceiling prices. Later the Federal Price Administrator passed a regulation and fixed the "ceiling" or maximum prices for

such commodities. These prices were below those prescribed by New Jersey Fair Trade schedule. It was contended by the counsel for the cut rate drug company that the New Jersey price regulation law was rendered void by the Federal ceiling price regulation and that, therefore, its company was not affected by the state law. The lower court agreed with this contention. In other words, the lower court held that the drug company wilfully and knowingly sold complainant's commodities at prices less than those stipulated under the New Jersey statute but that its prices were within the Federal regulations which had invalidated the state law. However, the higher court reversed this verdict, and said:

"The Federal regulation was not designed directly to modify or supersede the minimum prices in effect in March, 1942, under the (New Jersey) State Fair Trade Act. . . . Defendants (drug company) are under no obligation to vend complainant's products; and they are not free to retail them in violation of the State statute."

WHAT IS MISLEADING ADVERTISING?

The Federal Trade Commission defines unlawful advertising as that which is misleading or which induces the purchase of drugs injurious to health under the conditions prescribed in the advertisement or under such conditions as are customary or usual. The question presented a recent court was: Who has jurisdiction to decide whether labeling or advertisements are misleading?

For illustration, in *Miles Laboratories, Inc., v. Federal Trade Commission*, 140 Fed. (2d) 683, re-

ported March, 1944, the question presented the higher court was whether the Federal Trade Commission has jurisdiction to decide whether a manufacturer's labeling and advertising of products is false or misleading. The higher court said:

"For a Federal Court to assume the right to suspend the Commission's investigation, while it determines controversial questions of law or fact, would be a clear assumption of power it does not possess."

In other words, this court held that under the Federal Trade Commission Act, the Federal Trade Commission's remedy and decision must be exhausted before resort can be had to Federal Courts.

WHO IS LEGAL AGENT?

A legal agent is one authorized by expressed or implied contract to represent and bind his employer. This cannot be accomplished by a mere statement of an agent to a prospective purchaser to the effect that the agent has authority to bind his employer.

For example, in *W. T. Rawleigh Company v. Hannon*, 16 So. (2d) 800, reported February, 1944, it was shown that a manufacturer of medicines, toilet articles, and the like, sued to recover of the guarantors money due by a purchaser who had with the manufacturer a contract to purchase its articles on a credit basis. During the trial the outcome of the litigation hinged upon the liability of a seller for statements made by its agent to a prospective purchaser. This court clearly held that statements or declarations of an agent made to a third person, in the absence of the employer, which were not brought to his knowledge or ratified by him, are not competent against the alleged employer to prove the fact of such agency, or the legal authority.

SALES MANAGER CANNOT CANCEL

No corporation employee, including a sales manager, may make a valid contract, nor cancel a previ-

ously made contract, without proper and legal authority of either the president of the corporation, or its directors.

For instance, in *Williams*, 14 So. (2d) 319, it was disclosed that a company filed suit against Williams to recover \$1,012.05, with legal interest, which amount represented a balance due for merchandise, services and equipment sold, furnished and delivered under the provisions of a written contract and agreement. This contract was signed by the president of the company. Williams testified that later he got in touch with the sales manager of the company who agreed to release him from obligations of the contract.

However, the lower court held Williams fully liable on the contract and for full payments. The higher court approved the verdict.

WHEN SALESMAN IS LEGAL EMPLOYEE

Many Federal laws confuse readers particularly those relating to Social Security, Workmen's Compensation Laws, the State Unemployment Compensation Laws, the Fair Labor Standards Act and the Soldiers' and Sailors' Civil Relief Act.

It is important to know that all employers must pay taxes or premiums on all employees, under the State Unemployment Laws, unless the testimony proves three things: (1) That the employee is free from the employer's control or direction over the performance of his contract of service; (2) That his work was performed outside the employer's place of business; and (3) That he was "customarily engaged in an independently established trade or business."

For example, in *Moorman Mfg. Company v. Industrial Commission et al.*, 5 N. W. (2d) 743, it was shown that a salesman was employed by a manufacturer on commission basis in a specified territory. The salesman used his own automobile, worked when, as, and where he pleased, and paid his own expenses, but the employer occasionally directed the salesman what customers to solicit.

The company claimed that the salesman was not its legal employee, but an independent contractor and as such was not entitled to compensation, under the States Unemployment Compensation Act, after the manu-

facturer discharged the salesman. However, the higher court held the manufacturer liable because he controlled the acts of the salesman.

It is important to know that the same law is effective with respect to payment of Social Security tax. Notwithstanding this decision the employer would not be required to pay to this salesman minimum wages specified by the Fair Labor Standards Act, unless the salesman sold goods shipped in interstate commerce.

EMPLOYEE TAKES SECRET FORMULAS

No employee will be permitted by the courts to "steal" his employer's secret formulas or the confidential list of customers and then use same to establish himself in a new and profitable business. However, under circumstances where an employer sues to recover heavy damages, the court will not award unreasonable damages although it would have in a proper suit granted an injunction against the former employee continuing in the new business.

For example, in *Michel Cosmetics, Inc., v. Tsirkas*, 26 N. E. (2d) 16, it was shown that a corporation is engaged in the business of manufacturing and selling lipsticks. These lipsticks are made in accordance with secret formulas and secret processes owned by it. An employee of the corporation, in the course of his employment, learned the secret formulas and processes used by his employer. Then he left the employ and established a competing corporation which manufactured and sold lipsticks made in accordance with the formulas and the processes owned by his former employer.

His former employer filed suit against the corporation and alleged that the latter had wrongfully manufactured the lipsticks in accordance with secret formulas and processes and had placed the lipsticks so manufactured in similar containers with the object of deceiving buyers. The former employer asked that the new corporation be enjoined from continuing their wrongful acts, and, also, that they be directed to account "for all sales and contracts made by them, or any of them, for the sale of lipsticks made by the secret formulae or secret processes." The former employer asked for additional \$25,000 damages.

The former employer did not

prove that the new corporation's business had resulted in a loss of his business. Therefore, the higher court refused to hold the new corporation liable for the requested damages, and said:

"The defendants (new corporation) are wanton wrongdoers and in such case 'every doubt and difficulty should be resolved against them.'"

SELLER AGREES TO NOT COMPETE

Modern higher courts hold that a promise of a seller of a business to refrain from competing with the purchaser will not be enforced unless it is ancillary to the main purpose of a lawful contract.

For instance, in *Dutch, Inc., v. Schleicher*, 131 Pac. (2d) 630, it was shown that the owner sold his plant and business for \$92,800. He agreed in a writing that he would not directly or indirectly manufacture or deal in goods in competition with the purchaser for a period of five years in a territory served by the purchaser. Also, the purchaser agreed to hire the seller, as manager, at a salary of \$100 per week. No period of employment was specified.

Soon afterward, the seller was discharged as manager and he started a competing business.

The purchaser filed suit and asked the court for damages and, also, for an injunction preventing the seller from violating his contract to not enter into a competing business.

However, in view of the fact that the seller of the business had been discharged, as manager, the higher court refused to hold in favor of the purchaser.

DEATH LIABILITY

Generally speaking, an employer is liable for death of an employee on testimony which proves that the work or employment affected the general health of the employee.

For example, in *Hayzlett v. Westvaco Chlorine Products Corporation*, 25 S. E. (2d) 759, it was shown that an employee died and his widow sued his employer to recover damages. She alleged that the employer furnished the decedent an insecure, unclean, unsafe and unsuitable place in which to work. She also alleged that the employer knowing decedent was subjected during his employment to exposure to sulphur dioxide gas and poisonous and noxious gases,

smoke and fumes, neglected to warn and instruct decedent as to the hazards incident to his employment.

The lower court refused to hold the employer liable but the higher court reversed the verdict and in holding the employer liable this court explained that an employer is liable for death of an employee where there is evidence that the decedent was in good health until a few months prior to his death, and he began to cough and sneeze, his eyes became irritated, and he suffered with sore throat and larynx, became very thirsty, began to tire easily under exertion, suffered pains in his chest, and lost his appetite.

PLANT NOT LEGAL NUISANCE

Modern higher courts hold that if any manufacturer shall so carry on his business as to constitute a nuisance to the public or to individuals, any persons aggrieved thereby may sue and recover damages, providing the plant is *not* so situated that nearby property owners should expect inconvenience and discomfort from operation of the plant.

For illustration, in *Heppenstall Company v. Berkshire Chemical Company*, 35 Atl. (2d) 845, it was shown that a property owner filed suit against a chemical company and asked the court to allow damages and grant an injunction against the chemical company because its operations of processing of beans created dust which impaired the health of nearby property owners. The higher court refused to hold in favor of the complaining property owners, and said:

"No hard and fast rule controls the subject. It has been said that a fair test as to whether a business lawful in itself . . . constitutes a nuisance, is the reasonableness . . . in the particular locality . . . under the circumstances of the case."

This higher court also laid down law to the effect that when products being manufactured are highly essential in modern war its operations will not be stopped although nearby property owners and other suffer discomfort. The court said:

"A denial of the injunction would inconvenience the plaintiff slightly. To grant it would put the defendant out of business so far as the processing is concerned for a long and critical period of time.

CHEMISTS' TESTIMONY WINS SUIT

Employers may avoid liability for alleged sickness of employees by having expert witnesses testify to true facts.

For example, in *Clark v. Southern*, 11 So. (2d) 17, an employee filed suit and alleged that for six years he worked in close proximity to the beaters that contained acids, liquids and other chemicals, and that such beaters were in a bad state of repair and leaked, and he was compelled to walk and stand on the floor where the chemical mixture accumulated. He testified that because of the chemicals the palms of his hands and soles of his feet became calloused, cracked open, and are sore and tender, which condition prevents his performing labor of any kind.

He further charged that his employer knew or should have known of the leaky condition of the beaters and that the floors were continuously wet with the chemical solution, and it was negligent in failing to remedy the situation and provide for him a safe place to work.

The employee asked the court to grant him heavy damages.

During the trial several chemists testified that the stock in the beater

was considered as a harmless natural liquid, meaning that it was neither an acid nor an alkali. Therefore, the higher court refused to allow the employee damages.

LAW OF TRADE MARKS

Modern higher courts hold that the owner of an established business is entitled to an injunction against the use of a name so similar in general appearance that it is likely to confuse and deceive the buying public. This law always is applicable although an infringing party *uses his own name*. For illustration, in *Kay Company v. Morris*, 171 S. W. (2d) 410, it was shown that a company using the word "Kay" does a national business under its name. The name was adopted because it was short and catchy. A man named Ray Barrett opened a competitive business. The competitor selected the name of "Ray" because he had gone by that name. The Kay Company sued the Ray Company and asked the court to grant an injunction to stop use of the name Ray Company. Mr. Barrett contended that since his first name was "Ray" that he had a legal right to use it in his business. However, the higher court granted the injunction.

Peruvian Sugar

Peruvian sugar is finding an active demand at good prices in the foreign market. The outlook is not regarded as being too promising however because of labor shortages and scarcity of fertilizers.

The unofficial estimate for the first four months of 1944 is 88,000 tons, of which 22,000 tons were accounted for in April. The year's output has been tentatively set at 430,000 short tons, which compares with 411,000 tons in 1943 and 496,000 tons in 1942.

Current domestic sugar consumption was 12,244 short tons in April. For the same month last year it was 13,374 tons, and 11,270 tons in March, 1944. During the first four months of this year 50,858 tons were consumed, which was an increase of 7 per cent over the same period in 1943, which was 47,672 tons, and 14 per cent over the 1942 figure of 44,499 tons.

Stocks as of June 1, 1944, amounted to 14,000 short tons.

Venezuela Exporting Candy

Compania Anonima Savoy Candy, Caracas, Venezuela, has exported considerable quantities of chocolate candy to the United States since January, 1944. This reverses the flow, as formerly such candies were imported.

Wax Imports

Since the lifting in June of import restrictions on beeswax and carnauba wax, the supply of both materials has been sufficient to meet all military and civilian needs according to the War Production Board.

There is a possibility that beeswax may soon be obtained from India and Turkey. Present sources of supply are South America and Africa, while carnauba wax is imported from Brazil.

More shipping space has been made available from South America for the importation of these waxes during the past few months.

Short Adages

by R. O'MATTICK

OTTO STOCK has sent us a clipping of John Kieran's column, conducted in the *New York Sun* and called *One Small Voice*. Mr. Kieran, who is one of the experts on the Information Please Program and is said to know more things about most things than any other person with the possible exception of some essential oil buyers, writes an interesting piece on "Variety is the Life of Spice Brokers." Thanks to him, we learn that a survey has been made by a committee formed for that purpose, to determine the ordinary family preference in spices. The preference runs in this order: cinnamon, nutmeg, paprika, cloves, allspice and ginger. The preference depends, we think, to a large extent on the individual odor of each spice. It is axiomatic that taste is closely related to smell, and many things taste good because their odors are pleasant. In fact, Pat Chouli is puzzled by the lack of desire on the part of perfumers to drink their creations, which they always admire so much. He thinks that, if these liquid creations *smell* so good they ought to *taste* equally well to their makers and wonders how they can resist the temptation to quaff them at one gulp. But this is a digression. If the survey means anything, it shows that the odor of cinnamon is more popular than that of nutmeg and that nutmeg in turn has a greater odor appeal than cloves.

Many attempts have been made to survey preferences for floral odors but it is most difficult to decide whether women prefer rose to reseda, jasmin to lilac, or lily to gardenia. A good deal, say we, depends on what rose, what reseda, jasmin, lilac or gardenia.

Dr. Rowmaterial goes so far as to say that some perfume compounds are so skillfully put together, using every known device of the art and science of perfumery, that though the resulting odor is not pleasant, it is worthy of admiration. We were confused by this observation until



the good Doctor made it clear to us. "I would rather smell a good imitation of wormwood oil," he said. "than a bad imitation of a beautiful fragrance." It is not, according to him, a question of what one likes but how well the thing is done. "I prefer symphonies to jazz but a jazz band playing Boogie Woogie well is much better than an orchestra playing Mozart badly."

* * *

Sand L. Wood (who, incidentally, disappeared from sight recently) was with us when this conversation took place. The next morning he was at Dr. Rowmaterial's laboratory with a fine sample of imitation benzaldehyde. "Wonderful," said the Doctor, "a fine piece of work—but there is nothing in which I can use it." This did not help Sand get any orders so he went back to making gardenias and lilacs which are not so well put together but sell a lot better.

* * *

All of which reminds us of a story related by a member of the package industry (*that one* who has a backlog of orders on boxes). Unfortunately we cannot repeat the story here because *Ye American Perfumer* might be deprived of its second class mailing privileges and then it would require a lot of postage to get our column into the hands of our myriads of readers.

* * *

"What is the use," says Cory Ander, "of talking about what we would have done had we foreseen what would be when it was." True, Cory. If some people we know had foreseen the alcohol situation, they would have built a pipe line from Porto Rico to their plant just before the war. The pipe line would have had several inlets on the way up—one, for instance, around Florida where jasmin oil from the well-established plantations there would flow right in.

U.S.S.R. Sugar Production

It is estimated that the Kursk Province, Soviet Russia, will produce 108,000 short tons of sugar. Five sugar factories have been repaired ahead of schedule, and five more factories are expected to be put back in to productive operation this year.

In the southern regions two-thirds of the sugar factories were destroyed, but reconstruction is in progress. It is estimated that 150 factories will be in production this year compared with 28 last year. Even so, and with the area planted to double that of last year, the sugar output this year is expected to be far below that of pre-war levels.

Emulsions, Emulsification, and Emulsifying Agents

Third of a series of articles discussing recent developments in the field . . . Preparation of oil-in-water and water-in-oil emulsions, new trends and discoveries

by LOUIS T. MONSON

IN the first portion of the present paper, we saw that in its simplest terms an emulsion consists of an oily material, an aqueous material, and a relatively small proportion of a very important third component, an emulsifying agent. The emulsion owes its stability to the fact that appreciable concentration of the emulsifying agent takes place in oriented form at the boundary or interface between the oily phase and the aqueous phase of the emulsion, by a process known as positive adsorption, as has been explained. It has been shown that whether the emulsion is one of droplets of water in oil or of droplets of oil in water is determined by the selection of the emulsifying agent.

EMULSIFYING AGENT

Since the emulsifying agent is so obviously the most alluring constituent of the system (one could hardly say any leg of this three-legged stool is the most important), further discussion was included to show that this class of materials in general comprises large molecules of organic chemical nature, of unsymmetrical or polar structure, which are surface-active and colloiddally soluble in the media in which they are used. They may ionize in aqueous solution to give negatively-charged colloidal particles, in which case they are called "anion-active"; or they may produce positively-charged colloidal particles and be termed "cation-active." In some instances, unlike the foregoing two classes, they are non-ionogenic, but are nonetheless effective emulsifiers. We come now to a consideration of some specific examples of the large number of emulsifier types and classes, and especially materials whose use is of more recent date.

While soaps are among the earliest

known emulsifiers, modifications and variations of this general class continue to be developed, and the class as a whole is still in enormous demand. The first variations or differences recognized in this class were the differences which distinguished or characterized the soaps made from different oils. For example, olive oil soaps were so desirable in properties that attention was concentrated on their manufacture; and in time they became so well-prepared and so popular that the designation "castile" became a hallmark of soap quality. Coconut oil soaps were found to be resistant to hard water. Potassium soaps were in general soft soaps and sodium soaps were in general hard soaps. Other characteristics came to be recognized and either sought and utilized or avoided. But in all cases, men worked with natural products and accepted their unfavorable characteristics along with their favorable ones in comparative resignation.

No one oil or fat had wholly favorable or unfavorable characteristics for soap-making, however. This is true because, almost without exception, the natural oils and fats are not simple substances but complex mixtures. In general, they are mixtures of glycerides of the fatty acids; their glycerine content is constant in composition, but their fatty acid content might be in part oleic, stearic, palmitic, lauric, myristic, cerotic, linoleic, linolenic, or any of a number of other fatty acids. In each instance, the glycerine residue or glyceryl radical binds three fatty acid residues or radicals to compose the molecule; but in many instances the molecule of glyceryl radical and three fatty acid radicals is complex in the further respect that two or even three different fatty acids might

be represented therein. This is now known to be the case; but the earlier soaps were not prepared from individual glycerides so as to exclude any undesired fatty acids. They were prepared from such mixed glycerides; they were in turn mixtures of sodium or potassium or other salts of a number of fatty acids; and they were used as such.

In recent years, it has been found practicable on a commercial scale to separate the fatty acids present in complex mixture in oils and fats by selectively or fractionally distilling them, after first decomposing the oil or fat by alkali saponification and then splitting the soap so formed by means of a mineral acid (or by other desired means which would result in the production of a mixture of free fatty acids). The various comparatively pure fatty acids so recovered are offered in free form, or are actually recombined with the glycerine recovered from the saponification step of the process, to produce a synthetic oil or fat of definite and controllable composition. In other words, soaps of such definite and controlled composition are made available commercially for use as emulsifiers. This is an advance of high commercial importance. (Certain valuable derivatives of the separated fatty acids are obtained in secondary operations, to be mentioned later.)

Another fact which increased the selectivity within the class of soaps was the inauguration of the manufacture of certain synthetic materials of basic or alkaline character, on a commercial scale. As a consequence of the availability of such materials, special soaps are now prepared from any desired fatty acid or acids and triethanolamine or other such syn-

thetic base. These special soaps find application in many instances where the simple sodium, potassium, ammonium, or heavy metal soaps have been proved unsatisfactory.

MODIFIED OILS AND FATS

Long ago it was found possible to modify the properties of oils and fats by subjecting them to the action of different chemical reagents, principally sulfuric acid. The products obtained by means of sulfuric acid were known as "sulfonated oils," although they were probably strictly "sulfated oils" in almost all instances. Such sulfonated fatty oils exhibited certain markedly favorable characteristics, improved solubility in water, resistance to hardness in water, especially when only partially neutralized by alkali, deposition of oily rather than curdy reaction products with hard water if not wholly resistant to its influence, etc. Shampoos have for many years employed sulfonated fatty oils as bases; and products so prepared have been employed as emulsifiers in many fields since their introduction to commerce about 100 years ago.

PARTIAL ESTERS OF FATTY ACIDS

Another variation of the broad class of fatty materials was achieved by reacting glycerine with oils to produce lower glycerides, i.e., mono- and di-glycerides. Natural oils are triglycerides. As stated above, they represent the combination of three fatty acid residues with a single glycerine residue to form an ester, the combination being chemically possible because glycerine as a trihydric alcohol, has three points of reactivity for combination with acids, in the form of three hydroxyl groups. Since fatty acids have only one point of reactivity for combination with alcohols, it takes three fatty acid residues completely to react with each glycerine residue. If only two fatty acid residues so react with the glycerine residue, the product is a diglyceride, and there is one free or unreacted hydroxyl group present in the molecule of the "partial ester," as the product is known. If only one fatty acid residue is used for one glycerine residue, a monoglyceride is formed and there are two free hydroxyl groups present in the molecules of this partial ester. Since fatty bodies generally are thought of as

being water-insoluble, and since the hydroxyl group has a strong tendency to cause any compound containing it to become more water-soluble than the same compound would be in its absence, it is obvious that such lower glycerides possess characteristics which make them potentially valuable as surface-active materials. Recalling our previous discussion, we know the hydroxyl portion of the molecule will be expected to align itself on the water side of a water-oil boundary, while the fatty acid portion of the molecule will as naturally tend to face the oil side of this interface. That this is actually the fact is shown by the general acceptance of such lower glycerides in current practice. DeNavarre, in his book, *Chemistry and Manufacture of Cosmetics*, says of glyceryl monostearate (the monoglyceride formed when one molecule of glycerine and one molecule of stearic acid react): "Of the class of self-emulsifiers . . . glyceryl monostearate is probably the most important, certainly one of the best known and most foolproof materials to handle if such a thing can be had."

Closely related to the natural oils and fats and the lower glycerides of fatty acids discussed above are the glycol esters which have come into general use in recent years. Ethylene glycol was first used in large quantities commercially as a non-evaporating anti-freeze. As production increased, it began to be used for its chemical properties. It resembles glycerine in being a polyhydric alcohol, but, unlike it, possesses only two hydroxyl groups instead of three. Consequently, a molecule of glycol can react with one or two molecules of a fatty acid to produce esters which are valuable in the emulsion field. A large number of these products are today offered under a myriad of tradenames so original that one sometimes suspects the manufacturers must be maintaining two research departments, one to develop the reagents, another to develop suitable tradenames for them.

As a further extension of these developments, the compounds of diethylene glycol might be mentioned. Having two hydroxyl groups per molecule, ethylene glycol has the power of combining with itself, through two of the four hydroxyl groups present in two molecules, to

produce diethylene glycol. This latter still retains two hydroxyl groups capable of reacting with, for example, fatty acids. The diethylene glycol esters of fatty acids are hence available in commerce. The self-reactivity of ethylene glycol can be used to produce tri-, tetra-, and higher poly-glycols, which may in each instance be combined with fatty acids as described above. Furthermore, instead of ethylene glycol one may employ propylene glycol (a homolog or blood brother of ethylene glycol, containing the familiar two hydroxyl groups but possessing the propylene group, C_3H_6 -, instead of the ethylene group, C_2H_4 -). Propylene glycol is capable of forming di-, tri-, and higher glycols by reaction with itself. It is obvious that there are countless examples of this broad class of materials to be considered if one is seeking an emulsifier for a specific purpose. (It should be remembered that the partial esters, those compounds in which at least one free hydroxyl group persists, are the ones to be considered as potential emulsifiers; those esters in which all the hydroxyl groups are esterified may be valuable ingredients in emulsions, but for other reasons.)

A class of materials that has been introduced to commerce in the past few years comprises fatty acid esters of sorbitan, a partially chemically dehydrated polyhydric alcohol related to the sugars. The sugar alcohols contain five or more hydroxyl groups. Obviously, if one of them is combined with a fatty acid residue, the product possesses the long fatty chain which lends oil-solubility ("hydrophobe") characteristics, while the remaining hydroxyl groups tend to make the compound water-soluble ("hydrophile"). Here again we have the dual nature and the balance of hydrophobe and hydrophile characteristics which makes for surface-activity and potential value as emulsifiers.

Saponified waxes are somewhat akin to the foregoing materials. Waxes resemble oils and fats in that they contain fatty acids, but differ by containing high-molecular-weight monohydric alcohols instead of the polyhydric alcohol, glycerol. When saponified, the waxes produce soaps from their fatty acid content; but the simultaneously liberated wax alcohol has properties arising from

the possession of a long carbon chain and a hydroxyl group which make it resemble in some degree the diglycerides.

Still another class of reagents somewhat related to the foregoing types is prepared by reacting ethylene oxide or some other alkylene oxide with a partial ester of a fatty acid. The resulting polyalkylene ether of the parent ester is currently being advertised commercially as a solubilizer, and is asserted to have emulsifying properties as well.

In all cases, the lower glycerides, the glycol and other polyhydric alcohol mono esters, etc., just discussed are not ionogens, i.e., they do not produce either a positively charged particle or a negatively charged particle, at least when dispersed in water (to the extent they do disperse therein). In this respect, they differ from another class of fatty derivatives which have been commercialized in enormous volumes in recent years, the fatty alcohol sulfates.

FATTY ALCOHOL SULFATES

The fatty alcohol sulfates are produced by the action of sulfuric acid on fatty alcohols, just as sulfonated fatty oils are formed by the action of sulfuric acid on vegetable and animal oils (or, in some cases, by the action of sulfuric acid on the free fatty acid itself, e.g., sulfonated oleic acid). Sulfonated fatty oils have been mentioned above, where it was stated they possess certain advantages over the common soaps. However, sulfonated fatty oils still contain the organic acid group, $-\text{COOH}$, the carboxyl group; and, having a long fatty acid chain of carbon and hydrogen atoms as well, they are still susceptible to undesirable reaction with hard water.

Although they may not form hard curds with such hard water, they do react with it, and in some degree and in some sense they may be said to be destroyed by it, because the reaction products are generally more nearly water-insoluble and less active than the original sulfonated fatty oils. If the reaction which is so undesirable takes place by virtue of the combination of calcium or magnesium with the carboxyl group, as it does, the logical answer to the problem is to eliminate the carboxyl group from the fatty material, later sulfonating the body so obtained in this

process of elimination procedure.

The commercial process employed to accomplish this elimination step was plainly a difficult one, because it did not come into large commercial use until within the past ten years or so. It consists in converting the carboxyl group of a fatty acid to the hydroxyl group of a fatty alcohol by hydrogenation. In addition to removing the undesirably reactive carboxyl group, the process enjoys the happy coincidental faculty of introducing a desirably reactive hydroxyl group at the same time. The fatty alcohol products may themselves be employed without sulfonation or other processing for some purposes; but their important use has been as fatty alcohol sulfates, which materials are obtained when strong sulfuric acid reacts with fatty alcohols and the acidity of the reaction mass is neutralized with a base like sodium hydroxide. These fatty alcohol sulfates have found wide use as shampoos ("soapless shampoo"), dentifrices (including the highly advertised priceless ingredient in the brand that transformed Poor Miriam from a wrong number into a social success), etc.

Pursuing this class of materials further, the research chemists noted that if the sulfate group were attached at the center of the long fatty alcohol chain, products were obtained which showed certain improved properties as compared with the simple sulfated fatty alcohols having the sulfate group at one end of the carbon atom chain. Accordingly, commercial products having this favorable structure have found their way into use.

OTHER SULFONATED EMULSIFIERS

Other materials derived by the action of sulfuric acid or containing sulfuric or sulfonic groups have been widely used. For example, the excellently publicized demonstration of the duck that could not stay afloat in water depended for its success on the use of a small proportion of an ester of a sulfonated dicarboxylic organic acid in the water. When naphthalene, an alcohol (especially one containing three, four, or five carbon atoms and one hydroxyl group, these being the most used), and sulfuric acid are reacted, products are obtained which are known broadly as alkylated naphthalene sul-

fonic acids. On neutralization of the undesirable strong sulfonic acidity by means of bases, the salts of these materials are formed. These have been in increasingly wide use for some fifteen years at least, under many trade names.

A material originally discarded or burned as a by-product of the petroleum refining industry is now used in millions of pounds annually, in part as an emulsifier. When petroleum distillates are reacted with strong sulfuric acid, as in the manufacture of lubricating oil or white mineral oil, the by-products of the reaction include petroleum sulfonic acids. Some of these are water-dispersible ("green acids"), while others are preferentially oil-dispersible although usually both water- and oil-dispersible ("mahogany acids"). The mahogany acids were first employed in fat-splitting in the soap and candle industry; but they are now used in such volumes in the preparation of cutting oil emulsions and other products and they have exhibited such valuable properties in such uses that war demands have placed them in the restricted use class.

The mono glycol esters discussed above have been reacted in such manner as to incorporate a sulfate group in place of the remaining hydroxyl group in the compound, producing materials having still different and desirable properties. These, too, are in commercial production. All these sulfated and sulfonated products are ionized in water to produce a colloidal ionic particle bearing a negative charge. They are hence all "anion-active."

Casein has been used as an emulsifier for generations. It has already been discussed above in connection with the structure of emulsifying agents, and will be referred to subsequently when practical applications are described.

Pectin, a by-product of the citrus and apple industries, is available in large quantities and has been suggested as a substitute for gums tragacanth, acacia, karaya, and carob. An article in the March, 1944, issue of the *AMERICAN PERFUMER* considered its properties and applications in detail: An illuminating observation made in that article is that the four gums mentioned above were imported to the extent of 24

million pounds in 1939. When it is recalled that they represent only a very small group of emulsifying agents, the total volume for all commercial emulsifiers must be recognized as enormous.

CATION-ACTIVE MATERIALS

The cation-active emulsifiers are best exemplified by nitrogen bodies which are derivatives of ammonia. They are of relatively recent commercial importance, additional fruits of the extensive development of synthetic chemical manufacture in this country in the past twenty years or so. For example, the manufacture of individual fatty acids from natural oils and fats, mentioned in the early paragraphs of this section, brought with it the manufacture of primary fatty amines in commercial quantities. These compounds have the long carbon chain of the fatty acid series, but they possess an amino group, $-NH_2$, in place of the carboxyl group $-COOH$, of the fatty acids. (The relationship of the amines to ammonia is made clear by setting down the latter's formula, NH_3 . The amines are merely ammonia in which at least one hydrogen atom has been replaced by an organic group composed in most cases merely of carbon and hydrogen atoms. For example, $C_{18}H_{37}-NH_2$ represents octadecyl amine. At any rate, the organic group is linked to the ammonia residue through a carbon-nitrogen linkage, and that particular carbon atom is thus pres-

ent with no oxygen attached to it.

Somewhat similar products are the amides, which possess a residue of ammonia and an organic radical. They differ from the amines in that the carbon atom which is attached to the nitrogen atom also has an oxygen atom linkage. The latter quite effectively inhibits any alkaline properties in the amides. In fact they are neutral substances, whereas their parent ammonia and the related class of amines are both distinctly basic. Any amides which are offered as cation-active materials must therefore be cationic because they contain simultaneously one or more basic amino nitrogen atoms, or for some other reason. (Certain commercial amides are susceptible to sulfonation, but the sulfonated or sulfated amido bodies which result are surface-active by virtue of their sulfonic or sulfate group. They are hence anion-active. Several such products are available commercially today.)

Another group of nitrogen-containing materials are the quaternary compounds. They possess the ammonium residue, $-NH_4$, in which all four hydrogens have been replaced by organic groups. Such materials are available in limited degree and are cation-active products.

Development of the use of cation-active reagents has not proceeded as far as has that of the anion-active class, because until the commercial production of cation-active materials in recent years, most of the examples

of the class were laboratory curiosities. Today they are coming to be manufactured on a tonnage basis; and we may expect continued rapid development of the field.

APPLICATION OF EMULSIFIERS

In a subsequent portion of this paper, it is hoped to abandon the present organic chemical approach and present some practical illustrations of the application of some of these emulsifiers in the production of useful emulsions. It has been deemed necessary to present this section as a background and to emphasize the differences and, at the same time, the close inter-relationship existing between the myriad of classes of materials that have found application as emulsifiers throughout the years. Such a foundation tends to rationalize procedures that have been adopted and followed for generations without any full comprehension of their scientific basis. With even the most incomplete disclosure of the characteristics and properties of these various classes, an understanding or "feeling" for their adaptation and use is cultivated; and one begins to bind together hitherto seemingly unrelated facts of the past, and to project theories into the future. So does an art become a science. This explanation is our apology for becoming possibly too technical in this present section of the presentation.

(Editor's Note: This article will be continued in an early issue.)

Insect Repellents

Insect repellents will undoubtedly come in for a big play once ingredients are available. The olden mixtures of citronella, pennyroyal and clove oils will be quickly forgotten. Instead you will see wide use of ingredients such as:

Dimethyl and diethyl phthalates, 2-ethyl hexanediol, butyl mesityl oxide oxalate, lauryl alcohol and nitrile, unsaturated organic sulfides and polysulfides such as methallyl sulfide and disulfides, aralkyl esters of salicylic acid such as hydrobenzyl salicylate or the butyl ether of benzyl salicylate, diethylene glycol monoethyl ether, diethylene glycol monoethyl ether acetate, diethylene glycol monobutyl ether, 4-fluor-coumarin, 6 and 7-methylcoumarin, 2-isovaleryl-1,3-

indandione and other indandiones, fenchyl thiocynoacetate, thiuram disulfides, dithiocarbamates, cyclohexyl caprate or furoate, a,a-di(p-chlorophenyl)-b-b-b-trichlorethane (D. D. T.).

These are a few of the chemicals that show the greatest promise. They may appear as straight chemical substances, mixtures, emulsions, creams and alcoholic lotions, depending on length of time and action desired.

Some believe the market for repellents will never be big because one has to practically douse the whole body to repel mosquitoes. If only bare parts are treated, the insect may bite through thin summer clothing. The reasoning is sound. Maybe a repellent will have to be impregnated into the fabric too.

A liquid would do nicely.

Spanish Naval Stores

Resin produced by La Union Resinera Espanol, a Spanish company, increased from 13,750 tons in 1942 to 16,100 tons in 1943. The production of turpentine increased from 2,790 to 3,200 tons in the same period of time, and colophony (resin) from 9,680 to 11,400 tons. Pine trees utilized in 1943 totaled 7,500,000.

Portuguese Olive Oil

The production of olive oil for the year 1943 is estimated at 90,000,000 liters from Portugal, compared to 40,000,000 liters for 1942.

It is too early yet to estimate the current year's output, but it is believed that it will be about 60,000,000 liters. Crop indications are good.

The Stabilization of Aldehydes

A study of aldehyde anti-oxidants . . . The history of research in this field . . . Effects of several acids, amines and phenols on stabilization of perfume aldehydes

by A. T. FIORE and EDWARD SAGARIN

Givaudan-Delawanna, Inc.

THE Givaudan laboratories have, over a period of years, amassed a considerable amount of information on the effects of several acids, amines and phenols on the stabilization of perfume aldehydes, when used in small or trace amounts; and likewise extremely valuable information on the inhibiting effect of certain perfume alcohols on the oxidation of these aldehydes.

A study has been made of the stabilization of the aliphatic aldehydes containing from eight to twelve carbon atoms, as well as of cyclamen aldehyde, cinnamic aldehyde and hydroxy-citronellal. Several other aldehydes were studied in less detail, and the results are given here.

Samples of each of six fatty aldehydes were taken, and analysis made for the acid values. Three samples of each of the compounds were taken, one left untreated to act as a control, a second treated with 0.1% of diphenylamine, and a third with 0.5% of this same substance. The samples were allowed to stand in open glass dishes, with free access to air.

DIPHENYLAMINE STABILIZATION TESTS

The results of the diphenylamine stabilization tests, as indicated by the increase in acid values, are shown in Table II.

From this study, it can be seen that diphenylamine is an effective anti-oxidant for the fatty aldehydes, and that an increase from 0.1% to 0.5%

is not justified by a corresponding decrease in acid formation.

Further tests, however, showed that despite the effectiveness of this anti-oxidant, fatty aldehydes in the presence of light and air, when containing diphenylamine, gradually develop a yellow color.

Also effective as stabilizers for the fatty aldehydes were benzyllaniline and tertiary butyl catechol. The latter has the advantage of causing no discoloration, unless there is present in the oil some trace of iron.

Of interest in this study was the development of a mixture of two known chemicals, neither of which were particularly effective as anti-oxidants when used alone, but which, in combination, produced an excellent inhibitory effect. In recent terminology, this effect is described as synergistic, and we shall refer to this mixture as Stabilizer GSA (Givaudan Synergistic Antioxidant).

A comparative study of the efficacy of diphenylamine, benzyllaniline and Stabilizer GSA on saturated aliphatic aldehydes was made, and the results are given in Table III. It is our opinion, based on these studies, that diphenylamine and Stabilizer GSA are far more effective than an equal concentration of benzyllaniline, in retarding undesirable changes (oxidation and polymerization) in these aldehydes. Note particularly that in the cases of aldehydes C-8, C-10 and C-12, the samples containing benzyllaniline showed a serious loss in total



Titration Control in Givaudan Laboratory

aldehyde and acid content, a loss probably traceable to polymerization, while the other stabilizers inhibited or stopped completely this polymerizing tendency.

ANTIOXIDANT FOR CINNAMIC ALDEHYDE

In continuation of these studies, an effort was made to find a suitable antioxidant for cinnamic aldehyde and its related compounds, amyl cinnamic aldehyde and dehydro cyclamen aldehyde. Use of such common stabilizers as thymol, eugenol and benzyl alcohol for this purpose have proven entirely ineffective. Tertiary butyl catechol and Stabilizer GSA were found to be excellent anti-oxidants for these unsaturated aromatic aldehydes. The results of these tests are given in Table IV.

It was also found that satisfactory inhibitors were capable of regenerating aldehyde from what appeared by analysis to be partially oxidized samples. This is of special interest in the study of auto-oxidation, since it seems, in our opinion, to establish the presence of an intermediate stage between the aldehyde and acid which, under suitable conditions, is capable of regenerating the aldehyde.

Turning once again to Stabilizer GSA, this mixture was likewise

TABLE I

	ALDEHYDE C-8			ALDEHYDE C-9			ALDEHYDE C-10			ALDEHYDE C-11			ALDEHYDE C-12 LAURIC			ALDEHYDE C-12 MNA		
	Blank	Diphenyl-amine 0.1%	0.5%	Blank	Diphenyl-amine 0.1%	0.5%	Blank	Diphenyl-amine 0.1%	0.5%	Blank	Diphenyl-amine 0.1%	0.5%	Blank	Diphenyl-amine 0.1%	0.5%	Blank	Diphenyl-amine 0.1%	0.5%
Initial Acid Value . .	4.2	—	—	6.8	—	—	3.5	—	—	8.3	—	—	16.3	—	—	4.3	—	—
Three Hours	10.2	4.8	4.6	12.1	7.1	7.0	6.1	4.7	3.5	9.6	9.6	8.5	17.2	17.3	16.5	6.7	6.5	4.4
Two Days	119.0	9.7	7.5	97.0	10.2	8.7	50.2	9.2	4.5	16.8	10.5	9.4	27.6	18.8	17.2	19.8	9.9	8.0
Six Days	286.0	33.2	23.6	248.0	17.7	11.4	127.0	11.4	5.8	33.5	14.4	9.8	58.8	22.2	18.4	46.0	18.2	8.9
Twelve Days	—	—	—	330.0	36.4	29.9	223.0	8.2	5.0	57.5	13.7	12.2	97.5	25.1	19.4	80.0	21.9	11.0

TABLE II

	INITIAL		AFTER 30 DAYS		LOSS IN % ALDE- HYDE & ACID
	% ALDE- HYDE	% ACID	% ALDE- HYDE	% ACID	
Ald. C-8 + 0.25% Diphenylamine	94.7	1.47	91.2	5.7	0
Ald. C-8 + 0.25% Benzylaniline	95.6	1.42	67.0	24.2	5.8
Ald. C-8 + 0.1% GSA	94.5	1.12	91.8	3.94	0
Ald. C-10 + 0.25% Diphenylamine	95.0	1.37	93.0	2.13	0.34
Ald. C-10 + 0.25% Benzylaniline	94.5	1.34	73.5	11.8	10.54
Ald. C-10 + 0.1% GSA	94.2	1.74	93.3	3.47	0
Ald. C-11 + 0.25% Diphenylamine	96.7	0.98	94.0	2.93	0.75
Ald. C-11 + 0.25% Benzylaniline	96.5	0.95	85.5	11.3	0.65
Ald. C-11 + 0.1% GSA	96.5	1.96	94.5	1.57	1.59
Ald. C-12 + 0.25% Diphenylamine	94.5	4.85	92.3	5.8	1.25
Ald. C-12 + 0.25% Benzylaniline	93.8	4.75	79.5	5.2	13.85
Ald. C-12 + 0.1% GSA	93.2	5.15	91.5	6.1	0.75

tested on citral and cyclamen aldehyde. In the case of citral, a corked bottle containing no stabilizer showed only a trace of acid after six days. But when exposed to the air, the unstabilized sample increased in acid value from 2.1 after two days to 35 after six; while that containing 0.1% of tertiary butyl catechol and also exposed to oxidation, increased during the same period from 1.7 to only 6.9, and when containing GSA, the increase was from 2.5 to only 5.1.

With cyclamen aldehyde, the superiority of the synergistic mixture was even more apparent. A corked bottle of unstabilized cyclamal showed an increase in acid value from 7.6 (after 48 hours) to 9.8 (after 144), and a decrease during the same time of about one per cent in aldehyde content. An exposed sample de-

creased some nine per cent in carbonyl content, and increased in A.V. from 41.2 after 48 hours to 73.2 after 144. *The stabilized samples, which were exposed to the air, both showed higher aldehyde content after 144 hours than did the closed unstabilized bottle.*

We have referred to the work of Bogert and Davidson and Bogert and McDonough on the oxidation of aldehydes with which other aldehydes have been mixed. Our laboratories, in the study of aldehyde stabilization, have analyzed mixtures of the aldehydes with various alcohols commonly used in perfumery and some

of the results are given herewith.

The use of various alcohols to stabilize such aldehydes as hydroxycitronellal demonstrates how anti-oxidation becomes a chemical problem for the perfumer, and in its solution fine perfume compositions can be created. Thus geraniol and terpineol, in large quantities, proved to be excellent anti-oxidants for this compound, while phenyl ethyl alcohol was worthless for the purpose.

STABILIZERS

Geraniol was likewise an excellent stabilizer for benzaldehyde, while terpineol was less effective, and phenyl ethyl alcohol of no use at all. The results with benzaldehyde were repeated without variation with amyl cinnamic aldehyde.

With phenyl acetaldehyde, the most effective of several alcohols tested was again geraniol; ethylene glycol and terpineol were likewise helpful, although to a lesser extent, and the corresponding alcohol, phenyl ethyl alcohol, was of some value also.

With citronellal, the most effective alcohols to be used, among those tested, were geraniol and phenyl ethyl alcohol, with terpineol being quite helpful also.

Citral was stabilized with geraniol, the increase in acid value being kept to a negligible amount over a period of eight days, but a large quantity of the alcohol was necessary. Phenyl

(Continued on page 91)

TABLE III
CINNAMIC ALDEHYDE
Original Acid Value 2.8

	Unstabilized Control Sample	Stabilized with 0.1% tert-butyl catechol	Stabilized with 0.1% GSA
Acid Value after 15 hours in pure Oxygen	17.7	2.8	4.3
Acid Value after 24 hours of atmos- pheric oxidation ..	31.2	2.5	4.3

DEHYDRO CYCLAMEN ALDEHYDE
Original Acid Value 5.2

	Unstabilized Control Sample	Stabilized with 0.1% tert-butyl catechol	Stabilized with 0.1% GSA
Acid Value after 15 hours in pure Oxygen	34.2	4.8	4.6
Acid Value after 24 hours of atmos- pheric oxidation ..	49.0	3.7	3.9



Determination of Aldehyde and Acid Values

Essential Essences Produced in



Blida, cradle of the orange-tree plantations in Algiers

French North Africa

Algeria noted chiefly for its production of geranium essence . . . Morocco rich in principal essences . . . Aromatic essences such as neroli to be found in Tunisia

by MICHEL RAINEAU

ALGERIA is an important producer of orange trees, which nowadays occupy a very large place in the economic life of the country, where, by the way they were imported from Spain by Moslems when the latter were expelled in 1492 and came to North Africa. Many among the "Andalous" as they are still called, after the name of the province, Andalusia, where they came from, inhabited Blida. Now, Blida is a very nice and quiet town lying 60 kilometers from Algiers, at the very foot of the Atlas mountains, whose summits and slopes are snow-capped in winter time. It is covered with orchards and flowers. In the days of yore, a "marabout," that is, a saint of Islam, visiting the town by accident was surprised beyond all expression by the sight of such greenness. He exclaimed "The Turks (by that time Algeria was under the domination of the Sultans of Constantinople), the Turks call thee 'the small town,' I, Ahmed, call thee 'Little Rose.'" Since then, Arab poets and historians go on calling it so. To be sure, if Si Ahmed could again visit

Blida, he would surname it "The bedded flowers town," so many are the golden apple trees inside and outside the small city as well as in the rich surrounding farms. From Blida the orange tree plantations have quickly extended throughout the whole of Algeria, down to the Sahara. At the present time these plantations cover an area of 400 hectares . . . It seems, owing to such abundance Algeria must be a great maker of "fleur d'oranger." As strange as it may be, this is not the case, because the work of gathering and making the perfume does not pay, a litre costing only between 10/12 francs. The shortage due to the war of labor, solvents, and of cloths to put under trees to receive the flowers, are also responsible for so small a quantity of "fleur d'oranger" on the Algerian market.

COMPETITION FROM GUINEA

Moreover our orange-trees are seriously competed by those of Guinea where, it is reported, some trees produce up to one ton of fruits! and where labor is cheaper and more

numerous . . . No, the Algerian fleur d'oranger does not pay.

Jasmine as Algerian essential essence, is worthy of being mentioned, in spite of its rather small production, small but of a priceless output. This delicate flower is well known to the Algerian people, both Europeans and natives. Indeed, it was a charming and quite oriental daily scene in Algiers in peace time when, during the summer season, on hot evenings, inhabitants were seated, in the open air, on the café terraces. Arab merchants would go from table to table, and for a few cents, adorned the ladies' necks with jasmine garlands, the fragrance of which was spread around those mingled together with the scent of cups of coffee. About this delicate flower which, in order to preserve all its perfume, must be plucked as soon as it is blossoming, early in the morning at the dew hours, one may tell what an old French poet wrote regarding roses: "it has lived" ce que vivent les roses, "l'espace d'un matin." Never mind! as the untimely death gives birth to a new, and as it

were, everlasting life as a priceless perfume known all the world over! A farmer-manufacturer, M. Hoube, at la Chiffa, near Blida, has devoted himself in the making of jasmine essences. He has obtained very nice benzenique and petrolic concretes, containing about 48 per cent of absolute essence, and able to compete with the best qualities in the world. The annual production reaches some hundred kilog a year.

ALGERIA NOTED FOR GERANIUM

But Algeria is noted chiefly for its production of geranium essence, a local industry dating back to 1847; this essence possesses a peculiar characteristic of its own. Indeed, it is less fine, less rosy than the Grasse one, but for all that is much appreciated by perfumers. So much the more as the total production is under the strict control of the Government general, in order to prevent any fraud which could prove prejudicial to its quality. Some years ago, the Algerian production stood between 40 and 50 tons a year. At present, it would be in decrease. The distillations in 1943 would not exceed from 7 to 8000 kilogs.

Before 1940 the great supplier here of the Algerian geranium essence was the well-known Antoine Chiris firm, whose many branches are to be found everywhere in the world.

The history of this firm is well known in the industrial world. It was founded in 1768, at Grasse, where already 18 various kinds of essential essences were produced,

among which a flower pomade and perfumed oils. Thanks to the Chiris firm, Grasse has become for a long time and still remains, the metropolis for perfumes in France.

The firm was created in the midst of the rich plain, known as the Mitidja, between Blida and Algiers, on a very beautiful estate for the cultivation not only of the geraniums but also of many other essence trees, and flowers. In fact, on the "domaine de Sainte Marguerite," as the estate is called, there grow, among others, cypress, eucalyptus, thyme, lavender and various petitgrains. The domaine is equipped with a factory to distill essences (including the neroli one) with a view to sending them to Grasse to be sold to the great perfumers.

Among the above essences, it is worthwhile to mention the lavender one, obtained by distillation and which presents a high percentage of ether (in linalyl acetate). As the exports could not longer take place, these essences are reserved to the local perfume makers.

MOROCCAN ALMONDS

As regards Morocco and Tunisia, the former country can, or rather could, export large quantities of sweet and bitter almonds. Up to 1940 the shipments of sweet almonds to Great Britain reached to 1/1,500 kilogs a year (from 1 to 1,500) worth from 20 to 30 million fcs. Today the Moroccan almonds are sent to Algeria and Tunisia, or are still worked out on the spot. The other principal

essences to be found in the country are mint, rose, rosemary, lavender, cedar, lavandin (the lavender growing wild) and a product from the fruit (bean) of the "caroubier," which gives a thick mucilage. Note this—all those interested in the perfumery industry and who traveled over Morocco, this country is far richer than Algeria for its present, and above all future possibilities as a country for essential essences.

ESSENCES PRODUCED IN TUNISIA

Tunisia produces chiefly aromatic essences such as the "neroli," the price of which reaches 15,000 fcs. one kilog, and rosemary, which, on the contrary on account of its abundance, is rather cheap. A great deal of both essences are used in this country as spices in the native cooking or cake-making.

In conclusion, Algeria, Morocco and Tunisia produce numerous aromatic essences, but only Algeria, thanks to its equipment, as bad as it is, is able to convert these essences in cosmetics, toilet and beauty products as well.

Moreover, Algeria is in a position—and is anxious to do so—to transact a good volume of affairs with America, as many essential essences are available here, being far larger than the local requirements. But to that end, some light difficulties, administrative or other, above all administrative, must be taken off.

Domestic Olive Oil Production

The domestic production of olive oil declined from 9,900,000 pounds to 6,100,000 pounds from the 1942-43 season to 1943-44. At the beginning of the season it was anticipated that the yield would be about the same as that of the preceding season. This belief was based on the shortage of containers for canning, and the then current prospects. As a matter of fact, the crop proved to be slightly smaller, and the pack of ripe and other types of olives increased. Crushing declined to 20,000 tons, 38% of the total crop, compared with approximately 33,000 tons, 56% of the crop, for 1942-43. The price received by the farmers, both for olives for canning and for crushing, was the highest on record. Commercial production of olives outside of California is negligible.



Harvesting Black Currants

World-Wide Survey of Oil of Lavender

Chemical composition of extracted and distilled lavender oil

... Trade distinguishes between three grades of this oil ...

One of the most popular scents in English speaking countries

by DR ERNEST GUENTHER

Chief Research Chemist, Fritzsche Brothers, Inc., New York, N. Y.

THE earliest investigations on the chemistry of lavender oil date back more than 100 years but require no discussion as the findings were inconclusive. We owe our present extensive knowledge about the chemical composition of lavender oil mainly to the classical work of Bertram and Walbaum¹ and to the Schimmel chemists who identified many constituents, linalyl acetate as the principal one.

CHEMICAL COMPOSITION

The presence of the following compounds has so far been established: *furfural*—In the first fractions; positive reaction with aniline hydrochloride.²

valeric aldehyde (?)—According to the Schimmel chemists,³ the oil contains an aldehyde, seemingly valeric aldehyde.

amyl alcohol—Probably as mixture of several isomerides, b.p. 129-133° at 760 mm.; phenylurethane m.p. 39-41°.⁴

ethyl-n-amyl ketone—Only about 0.2 per cent is present; identified as semicarbazone m.p. 117-117.5°; oxidation to caproic acid.⁵

Because of its refreshing, characteristic odor, this compound plays an important role in the odor of the oil.

Distilling dried lavender, Ripert⁶ found that the first 33 per cent of the distillate contained 6 to 7 per cent ketones, while the corresponding fraction of lavandin oil contained only 0.8 to 1.2 per cent. The total content of ketones, calculated as ethyl-n-amyl ketone, in true lavender oil varies from 1.3 to 3.0 per cent.

Isolating the ketones from 800 grams of genuine lavender oil with trimethyl acetylhydrazide ammonium chloride, according to the method of

Girard and Sandulesco,⁷ Sandulesco and Sabetay⁸ obtained 30 grams of ketones which, upon fractionation, showed the characteristic odor of *methyl heptenone* (?)—B.p. 160-175° at 760 mm., n_D 1.4327; semicarbazone m.p. 111°.

carvone (?)—B.p. 80-100° at 3 mm., n_D 1.483, and *another ketone* (?)—Of very agreeable odor, in the residual ketone fraction.

x-pinene—Pinene nitrosochloride m.p. 102°; pinene nitrol benzylamine m.p. 122-123°.⁹ Only very little x-pinene is present in pure oils; larger quantities indicate adulteration with oil of turpentine.

cineol—Only traces have been found in genuine lavender oils. Formation of hydrobromide and jodol reaction positive only after destruction of linalool present in the same fraction, by heating with formic acid.¹⁰

Larger quantities of cineol in an oil of lavender indicate adulteration with oil of spike or oil of lavandin.

d-borneol and *d-bornyl acetate*—Present in free form and as acetate.¹¹ Identified by oxidation to camphor, oxime m.p. 118-119°.

l-linalool and *l-linalyl acetate*—The acetate, according to Bertram and Walbaum,¹² forms the main constituent, ranging from 30 to 60 per cent of the oil. Analysis of the Ag salts showed that aside from the acetic ester, the oil contains small quantities of butyric, valeric and caproic esters of linalool.¹³

The contention of Dalton¹⁴ that the linalool esters present in lavender oil consisted not of acetates but mostly of butyrates and some propionate was disproved by several investigators.¹⁵ Langlais, Goby and Reclaire¹⁶ showed finally that 94 per

cent of the acids liberated from the potassium salts of the saponified esters consisted of acetic acid.

Applying his method of cold formylation,¹⁷ Glichitch¹⁸ found that pure lavender oils contain 28 to 46 per cent free alcohols, 28 to 46 per cent combined, and 73 to 81 per cent total alcohol. The total amount of oxygenated compounds in pure oils, according to the same author, varies between only 81 to 91 per cent.

geraniol—Linalool is accompanied by another terpene alcohol, viz., geraniol which occurs in the fractions b.p. 110-120° at 13 mm. Isolated as CaCl_2 compound and identified as diphenylurethane m.p. 32°.¹⁹ Geraniol is present as free alcohol, also as ester of acetic, butyric, valeric and caproic acid.²⁰

Lavandulol— $\text{C}_{10}\text{H}_{18}\text{O}$ —Only a few years ago, Schinz and Seidel²¹ discovered in an oil distilled from true French lavender, *Lavandula officinalis* Chaix, a new primary and doubly unsaturated terpene alcohol, occurring in the free as well as the ester

¹ J. prakt. Chem. II, 45 (1892), 590.

² Ber. Schimmel & Co., Oct. 1903, 44.

³ Ibid., April 1903, 41.

⁴ Ibid., April 1903, 41; Oct. 1903, 42.

⁵ Ibid., April 1903, 41; Oct. 1903, 44.

⁶ Ann. f.als., 342 (1937), 276.—Brit.

Chem. Abstracts B (1937), 1268.

⁷ Helv. Chim. Acta 19 (1936), 1955.—

See also Ripert, Parfumerie moderne 32

(1938), 181.

⁸ Riechst. Ind. 8 (1937), 161.—Par-

fums France 16 (1938), 35.

⁹ Ber. Schimmel & Co., Oct. 1893, 25.

¹⁰ Ibid., Oct. 1903, 42.

¹¹ J. prakt. Chem. II, 45 (1892), 590.

¹² Ber. Schimmel & Co., April 1903, 44;

April 1904, 60.

¹³ Perfumery Essential Oil Record 17

(1926), 433.

¹⁴ Chir. Parfums France 4 (1926),

358.—Langlais and Goby, Perfumery Es-

sential Oil Record 17 (1926), 520.—Du-

pont and Labaune, Rev. Marques 4

(1928), 609.

¹⁵ Perfumery Essential Oil Record 18

(1927), 47.

¹⁶ Parfums France 6 (1923), 30.—Bull.

soc. chim. IV, 33 (1923), 1284.

¹⁷ Parfums France 1924, 262.

¹⁸ Ber. Schimmel & Co., April 1898, 32.

¹⁹ Ibid., April 1903, 44.

²⁰ Helv. chim. acta 25 (1942), 1572.

form, which they named lavandulol.

Purified over the allophanate m.p. 116-117°, lavandulol had these properties: b.p. at 13 mm. 94-95°,

$d_{\frac{17.5}{4}}^{20} 0.8742$, $n_{D19}^{20} -10^{\circ}12'$, $n_{D20}^{20} 1.4662$.

The constitution of lavandulol, closely resembling geraniol, was investigated by Schinz and Bourquin.²²

nerol—Identified by Elze²³ as tetrabromide m.p. 118-118.5°, and as diphenylurethane m.p. 50°.

thymol (?)—According to the same author;²⁴ m.p. 50-51°; phenylurethane m.p. 107-107.5°; nitroso compound m.p. 160-160.5°. The presence of thymol in *genuine* lavender oil, however, is very doubtful.²⁵

caryophyllene—Isolated from the sesquiterpene fraction and converted into caryophyllene alcohol m.p. 93-95.5°; phenylurethane m.p. 136-137°, by hydration according to the Bertram-Walbaum method.²⁶

coumarin—The presence of coumarin, first reported in 1900,²⁷ was confirmed by Ellmer²⁸ who isolated about 0.8 per cent from distilled lavender oil and 3.4 per cent from an extracted lavender oil.

ADULTERATION

Oil of lavender is frequently subject to adulteration; indeed, it can be stated quite frankly that adulterated lots have been almost more common on the market than genuine ones. This regrettable condition, provoked, if not forced, by unreasonable price demands on the part of the buyers, is aggravated by the fact that skillful sophistication cannot be detected by mere routine chemical analysis because the additaments used most commonly for this purpose, for instance, linalool and linalyl acetate which can be made synthetically, occur in the oil also as principal natural constituents.

Cutting lavender oil with the lower priced lavandin oil cannot actually be considered an adulteration, as it lowers the ester content and, therefore, the quality, yet retains the naturalness of the oil. However, an addition of linalyl acetate or other esters in order to reconstitute the original ester content of the lavender oil, definitely presents a form of sophistication.

Another more dangerous and frequently employed additament is ho



American Lavender—Seattle, Washington

oil (Japanese shiu oil), especially partly acetylated ho oil. Ho oil contains a high percentage of linalool which can be fully or partly acetylated. In addition, the oil is laevorotatory, therefore does not alter the optical rotation of the lavender oil.

Years ago, before ho oil was available, a great variety of synthetics were employed for adulterating lavender oil, for instance, linalool, linalyl acetate, geraniol, geranyl acetate, terpenyl acetate, and many other esters which all feigned a high ester content in the adulterated oil.

In view of these facts, it is important to submit lavender oil not only to a chemical analysis and to compare the ratio between the physical properties, but also to study the oil most carefully from the organoleptic point of view. A real expert, familiar with the scent of true lavender, will usually have no difficulty in dis-

tinguishing a genuine oil from one which has been adulterated.

Oil of lavender has a delightfully clean, refreshing, yet sweet odor which blends with many other essential oils. The use of lavender oil in perfumes and toilet waters goes back for centuries; it has always been one of the most popular scents, especially in English speaking countries.

APPLICATION

The trade today distinguishes between three grades of lavender oil, viz., those containing 30 to 35 per cent ester, those from 38 to 42 per cent ester and those of about 50 per cent ester. These oils, however, are not always produced as such and are

²² *Ibid.*, 1591.

²³ *Chem. Ztg.* 34 (1910), 1029.

²⁴ *Ibid.*

²⁵ *Ber. Schimmel & Co.*, Oct. 1915, 27.

²⁶ *Ibid.*, April 1913, 66.

²⁷ *Ibid.*, Oct. 1900, 40; April 1903, 44.

²⁸ *Riechstoff Ind.* 1927, 206.



Lavender Field—Kenya, East Africa

frequently the result of bulkings. In other words, an exporter receiving from the producing regions numerous small lots with a certain ester range will bulk them into standard types as demanded by his customers.

For expensive perfume work, the finest qualities of lavender oil, with an ester content of about 50 per cent is recommended. For lower priced preparations, especially for lavender waters, eaux de cologne and toilet waters in general, the qualities containing 40 per cent ester are better suited. For all around use this type of oil is probably the most economical.

The bulk of lavender oil, particularly the grades of 30 per cent ester, has always been employed in soap work. Lately, however, many soap manufacturers have shifted to oil of lavandin, replacing thereby lavender oil and this, as pointed out, has been one of the main reasons for the decreased production of lavender oil in recent years.

EXTRACTED LAVENDER OIL

(Concrete and Absolute)

Around 1925, some manufacturers of Grasse (A.M.), France, started to offer on the market lavender concretes and absolutes as extracted from the flowering dried herb with volatile solvents. The concretes are dark green solid masses, only partly soluble in 95 per cent alcohol, and volatile oils; the absolutes from which the alcohol-insoluble waxes have been removed in the usual way, are liquid, soluble in 95 per cent alcohol and in volatile oils.

The solvent usually employed is benzol (benzene); it gives a somewhat higher yield of concrete but a product of slightly darker color than petrol ether. The yield of concrete varies from 1.5 to 2.2 per cent, according to the number of extractions. The concretes, in turn, give from 50 to 60 per cent and in some cases much more absolute, the yield depending upon the number of extractions made of the herb material and, therefore, upon the quantity of waxes present in the concrete. The first extraction of the plants gives a concrete of high oil and low wax content which later increases (relatively) with each successive extraction until the plant is completely exhausted after the fourth extraction.

Concretes and absolutes contain a high percentage of high boiling com-

pounds (coumarin and coumarin derivatives) which by steam distillation of the plant material are not carried over into the distillate and, therefore, are lost. Over the distilled oil the concretes and absolutes possess the advantage of much greater fixation value, and a more suave, slightly hay-like, true to nature odor, but they do have the disadvantage of dark color and of insolubility in dilute alcohol. Concretes and absolutes are, therefore, not suitable for toilet waters and eaux de cologne. However, they give excellent results in face and toilet powders, in bath salts, and similar preparations. The concretes are highly recommended for soaps and shaving creams where they serve as an odoriferant and as a fixative par excellence.

CHEMICAL COMPOSITION

The chemical composition of extracted lavender oil is similar to that of the distilled oil except that it contains more of the high boiling constituents which are not carried over in steam distillation.

The presence of the following compounds has so far been established in extracted lavender oil.

esters of linalool, mainly *linalyl acetate*—According to Kleber.²⁹

coumarin—Also identified by Kleber,³⁰ m.p. 69°, furthermore by Ellmer³¹ who isolated 3.4 per cent from an extracted oil. Ellmer found that 1,000 kilos of lavender plants contain 227 grams of coumarin. The content of coumarin in extracted oils is about four times higher than in distilled oils. Ellmer explained this by the theory that the ferments in the plants are immediately destroyed by distillation and that only so much coumarin distills over as is present in free form in the plant cells. During cold extraction with volatile solvents, on the other hand, the ferments are not destroyed; they continue splitting the coumarin glucosides and additional amounts of coumarin are formed even during the process of extraction.

umbelliferone methyl ether (4-methoxy-coumarin)—M.P. 117-118°. Identified in the extracted oil by Kaufmann and Kjelsberg³² and by Pfau³³ who reported that 2.5 per cent of this compound separated as crystals from a concrete of lavender. Ellmer³⁴ found about 5 per cent in a concrete made by extracting lav-

ender with benzol. According to Ellmer, at least 60 grams of umbelliferone methyl ether are contained in 1,000 kilos of lavender plants.

Ellmer also suggested a method of isolating coumarin and umbelliferone methyl ether from essential oils:

The oil is dissolved in the same amount of methyl alcohol and, for the separation of free acids, is very quickly titrated to red with normal alkali solution and phenolphthalein. The solution is immediately shaken with ether and ice water and the separated ether layer extracted three times, for one hour, with concentrated barium hydroxide solution. The lactones are then separated from the united barium hydroxide solutions with dilute HCl, extracted with ether, and recovered.

cedrene (?)—This compound is present in lavender extracts, according to Volmar and Thurkauf.³⁵ However, their contention remains doubtful, as the m.p. of cedreneglycol C₁₅H₂₆O₂ (oxidation of cedrene with potassium permanganate) is actually 160°, according to Chiris,³⁶ even 167.5-168°, and not 150° as reported by Volmar and Thurkauf.

coumaric acid chlorophyll—Identified by the same authors. M.D. 207°.

²⁹ *Am. Perfumer* 21 (1927), 680; 22 (1927), 275.

³⁰ *Ibid.*

³¹ *Rieckstoff Ind.*, 1927, 206.

³² *Parfumerie moderne* 20 (1927), 108.

³³ *Perfumery Essential Oil Record* 18 (1927), 205.

³⁴ *Op. cit.*

³⁵ *J. pharm. chim.* VIII, 10 (1929), 199.

³⁶ *Parfums France*, 1925, 168.

(This is the last of a series of articles)

Sugarcane Wax

A plant is now in production manufacturing cane wax from sugarcane, in Nambour, Australia. It is reported that technical difficulties encountered at first have been overcome.

Sanitation Warning

The Food and Drug Administration has warned manufacturers of drugs and cosmetics to clean up any existing unsanitary conditions which may exist around their plants. This action is not only a warning as violations are to be met with injunction proceedings in federal district courts.

Heretofore such cases were not prosecuted, and contaminated products were removed from the market through seizure.

Essential Oils Re-export Scheme in the United Kingdom

by OUR BRITISH CORRESPONDENT

A SCHEME for the re-export of imported essential oils has been approved by the Ministry of Food. The department expects to release for shipment overseas reasonable quantities of essential oils now being imported under the Essential Oil Control Scheme. The oils available for re-export will be announced from time to time, but as far ahead as possible, and in any case not less than one month before the date which the granting of export licenses will be considered. Releases of oils against export licenses will commence from August 1, 1944, and for the first quarter, beginning on that date distilled lime oil and eucalyptus oil will be available for export. It is hoped to make available, later on, certain other oils. The prices at which the oils will be available to exporters will be communicated by circular to all datum period distributors of each particular oil.

DEFINITIONS

By an "exporter" is meant a trader who obtains the order from an overseas importer, or the trader who supplies the duly accredited buying agent in the United Kingdom of an overseas importer, such agent being remunerated exclusively by a commission from his overseas principal.

"Datum Period Distributor" means the trader who entered oils of the kind in question for Customs for importation during the two years ended August 31, 1939.

By "Approved Representative" is meant a trader who, under the Essential Oils Control Scheme for home trade, has been appointed by an overseas shipper to act as his representative in the importation of oils into the United Kingdom, or who is qualified under the scheme to act as an approved representative for oils imported by the Ministry. (It is possible for an "exporter" to be a "Datum Period Distributor," or an "Approved Representative," or both).

The export of all essential oils will continue to be subject to Board of

Trade export license. The exporter must attach to the application for a license the original order from overseas, e.g., cable, letter, etc. The order must bear a date not more than two months before the date of application. With large composite orders, a letter from the applicant giving full particulars of the order so far as essential oils are concerned may be acceptable, but proof may be required. The exporter must also send with his application a letter nominating the D. P. D. or supplier in the United Kingdom from whom he wishes to receive the oil, and this will be, as far as possible, the source or sources from which he obtains his pre-war supplies of that oil. If the license is withheld, the applicant will be informed by the Ministry of Food, if the reason is that the export quota of the oil is exhausted, or because an export price has been quoted which cannot be approved.

THE PROVISION OF OIL

A quarterly quota will be released for each oil that can be made available for export. When applications for licenses for any one oil, exceed the quarterly quota, the oil will, as far as is practicable, be allocated on a pro rata basis against applications at the sole discretion of the Ministry. If on the other hand, applications received up to the date announced are for less than the quantity earmarked for export, further applications will be considered at any time up to the commencement of the next quarter, so long as there is a balance of oil available. If the exporter's application is not received in time for him to receive a share of the quota for the oil for that quarter, or if his application for that quarter is not granted in full, his application if renewed within four days of the beginning of the next quarter, will receive special consideration.

The Ministry will make the oil available by instructing the Essential Oil Allocations Control to release oil from stock held under the control scheme already fully outlined in THE

AMERICAN PERFUMER: such oil would only be released to a D. P. D. of that oil. If the trader named by the exporter is not a D. P. D. for that oil, the Ministry will ask the named trader to nominate someone who is a D. P. D. for that oil. The Control will then be requested to arrange a release from a stockholder to the appointed D. P. D.

PRICES AND MARGINS

As previously mentioned, the prices to be charged by approved representatives to the D. P. D.'s will be communicated by circular to those concerned and in the case of an approved representative delivering to the appointed D. P. D. it will include the approved representative's usual margin and a sum to cover the landing charges, rent, interest and delayed allocations, or buffer stock commission where incurred. This additional sum, which will take the place of the fixed contribution, will be payable to capitol allocations control on completion of the delivery to the D. P. D. The same conditions will apply to a stockholder who may be a D. P. D. and not an approved representative. The margin for D. P. D.'s will be the same as is allowed for the home trade control, and where repacking is necessary the scale will be that laid down in circular No. 9 of the Regulations for the Importing & Distribution of Essential Oils, dated May 1, 1944, with any amendments that may from time to time be published by Allocations Control.

If the D. P. D. is supplying the exporter through a supplier named by the exporter he will be required to share his margin in equal proportion with that supplier: except that where a broker is nominated as the supplier he will only receive the normal selling brokerage of 1% from the D. P. D., and his buying brokerage of 1/2% from the exporter.

Exporters will be permitted to fix their own prices to their customers but the Ministry may ask the exporters to justify prices.

SMALL QUANTITIES

In the small quantities (probably in mixed consignments) if the exporter holds stock as a home trade user of that oil he will be allowed to draw on his stock and obtain replacements when the oil exported reaches a quantity which is equivalent

alent to that of an original container.

If an order is cancelled by the overseas importer, or it has been impossible to obtain freight space, the holder of the order involved must advise the Ministry of Food immediately, and in any event, if the oil is not shipped within three months of the date of the license he must notify the Ministry of the position. In either case the oil must be held at the disposal of the Ministry of Food.

BREAKING BULK CHARGES

Circular No. 9 referred to above lays down the following breaking bulk charges where the price to the user in original containers is:

	Under 10 s	Between 10 & 30 s	Over 30 s
1 cwt. drum	0.8	1.1	1.8
56 lb. drum	0.11	1.4	1.11
28 lb. tins in cases	1.0	1.5	2.0
14 lb. tins in cases	1.2	1.7	2.2
7 lb. tins in cases	1.8	2.1	2.8
7 lb. glass bottles packed in hamper or case	1.8	2.1	2.8
5 lb. tin in box	1.11	2.4	2.11
2 lb. tins in cartons	3.2	3.7	4.2
2 lb. bottles in cartons	3.2	3.7	4.2
1 lb. tin in carton	3.2	3.7	4.2
1 lb. bottle in carton	4.5	4.10	5.5

The amounts include the cost of packages, but drums and outer cases (except cartons) must be returned by buyers and are allowed for on return in good condition, viz.:

	s d
Drums cwt.	10.6
Drums 56 lbs.	6.6
Cases 14 lb. box	3.0
24 lb. box	4.0
56 lb. case	6.6
100 wt. case	9.6

Technical Abstracts

The Cosmetic Value of Glycerol
Helmut Baumann. *Seifensieder-Ztg.* 69, 79-81 (1942); *Chem. Zentr.* 1942, II, 109. Drying-out velocities were determined for stearate cream (I), glycerol monostearate cream (II) and lanette wax cream (III) in the presence of glycerine and glycerine substitutes. Glycerine delays the drying of I; pentamethylene glycol is more effective. Glycerol exerts some influence on the drying velocity of II but a sorbitol mixture is more efficient for II. Glycerol hastens the drying of III; best results for III are obtained

with pentamethylene glycol and III. Lanette wax without any glycerol or glycerol substitutes dries still more slowly than a stearin cream with glycerol or pentamethylene glycol. Cetiol is recommended as a synthetic, liquid wax of good penetrating powers. (Through *C. A.* 37, 6410-11, 1943.)

Plasticizers for Nitrocellulose lacquers. XXIX. Esters of p-toluene-sulfonic acid. 2. A. Kraus. *Farbe u. Lacke* 1943, No. 5-6, 27-8. Solubility tests made with methyl, ethyl, isoamyl lauryl, cetyl, oleyl, phenyl, naphthyl, cyclohexyl and dimethylcyclohexyl esters of p-toluenesulfonic acid and with TOK, TX and TZ showed that the esters containing low aliphatic alcohols are good solvents for collodion wool. With increasing length of the alcohol radical the solvent power decreases; it becomes practically zero for the cetyl and oleyl esters. The phenolic esters have low solvent powers; in the cold they dissolve collodion wool only when wet with alcohol or butanol. All 13 esters dissolve collodion wool and produce clear and clear-drying lacquers. The absorption power of the cryst. esters for the collodion wool film is limited. Crystn. from the lacquer film takes place with the phenyl and naphthyl esters and the TOK. The absorption power of the liquid esters depends on the solvent power of the esters for nitrocellulose. Additional data are given for the miscibility with resins, the influence on the strength of the film, and the influence of the same 13 esters on the flexibility of films, and on the light- and water-resistance of these films. (Through *C. A.* 38, 881-2, 1944.)

Intersurface Films in Emulsified Systems. Henri Coutinho. *Seifensieder-Ztg.* 68, 349-50, 362, 371-2, 382-3, 392, 401-2 (1941); *Chem. Zentr.* 1942, I, 1230-1; *cf. C. A.* 34, 6149. The significance of the intersurface films in emulsions, emulsions as ternary systems, theories of emulsion formation and orientation of the mols. of intersurface films, the formation of films, their physical state, thickness and relative strengths, the effect of pH on the physical properties, the general structure of surface-active substances and a method for the determination of the *cis* or *trans* form of a compound forming an in-

tersurface film by measuring certain physical properties (film strength, emulsifiability, stability of surface bubbles and mol. spreading power) are discussed. (Through *C. A.* 37, 6178-9, 1943.)

A Dentifrice. Brit. 549,704. Tooth paste and tooth powder are prepared of a mixture of chalk and trisodium phosphate. A plasticizer is added in the case of a paste. (Through *C. A.* 38, 840, 1944.)

Borax-Soap Mixture Used as Antidermatitis Cleanser. A washing compound containing approximately 75% of borax and 25% of dry soap was found in the laboratories of Borax Consolidated, Ltd., to possess desirable fungicidal properties and yet to be so mild in its action on the skin as to reduce any tendency to dermatitis. The borax is in finely granulated form so that, when mixed with the dry powdered soap, gumming or caking is avoided. The product is described as a good cleanser and will effectively and without waste remove dirt from the hands. The borax is added not merely as a diluent for the soap, but its hardness of two makes it softer even than chalk, it is readily soluble, and its abrasive action is only temporary as the sharp edges of the grains become blunted almost instantly. It has detergent and slight water-softening properties of its own, and it is a mild alkaline salt possessing the characteristic property of imparting to a soap solution a pH value lower than soap alone. (Through *Chemical and Engineering News* 21, 1753-4, 1943.)

Racemic Menthol—New Synthesis from Thymol. A. L. Barney and H. B. Hass. *Ind. & Eng. Chem.* 36, 85, 1944. A new synthesis of racemic menthol from thymol is described in which the desired products are separated in each of two steps by precision vacuum rectification. The use of a dehydrogenation catalyst in conjunction with a sixty-plate column allows the complete conversion of all the hydrogenation products of thymol to dl-menthone, which can then be catalytically reduced to give a good conversion to dl-menthol. All by-products obtained may be recycled, and the dl-menthol produced is indistinguishable in taste and odor from pure l-menthol.

Packaging P O R T F O L I O

HARTNELL

HARTNELL: "White Shoulders" and "Menace," each one a refreshing cologne of fragrantly cool distinction, are suggested for hot summer days. Long-staying colognes, they come in two ounce, four ounce and eight ounce bottles.



MATTHEW PRODUCTS: The new Victory package of Thermopine Foam Bubble Bath is an attractive green and white sack topped with a corsage of tiny pine cones and foliage. A bath in bubbles of this pine foam gives relaxation and stimulation of real pine oils plus the fragrance of true and woody pine.



MATTHEW PRODUCTS

LYNETTE



LYNETTE: Announcing a new and lovely perfume—Blue Sapphire. This cool and clear perfume, contained in an exquisite bottle having an unusual octagon-shaped stopper, is encased in a blue box. Dusting powder and concentrated toilet water gift sets are also available.



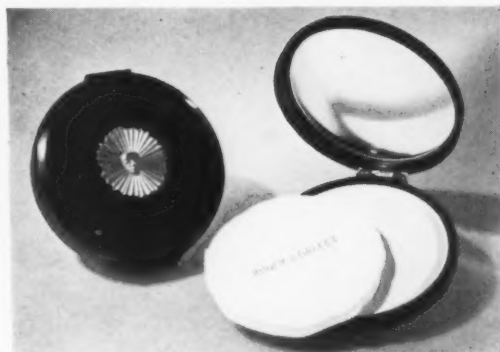
MIDDLEBROOKE LANCASTER



MARIE EARLE



REVLON



ROGER AND GALLET

MIDDLEBROOKE LANCASTER: Nutrine Hair Cream and Conditioner and Nutrine Ocean Foam Creme Shampoo are newly packaged for the consumer market, having powder-blue and chalk white stripes with bold magenta lettering and magenta caps.

REVLON: A luscious pink color in "Pink Garter" nail enamel and lipstick is now offered to complete the color picture for sun-tanned skin. It is suggested that "Sun Mocha" shade of face powder be worn with this brilliant pink.

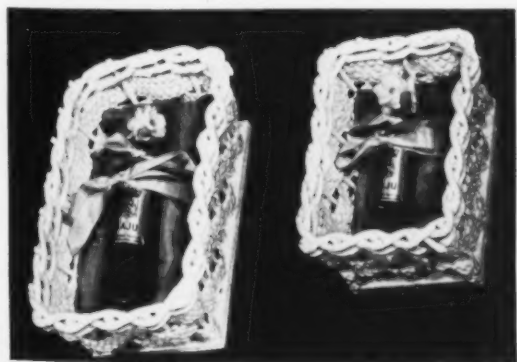
ROGER AND GALLET: Smartly-styled gleaming case of jet is the new compact featured by Roger and Gallet. No binder is used in the hand-pressed powder. A mere touch of the puff releases just the right amount of powder. Refills available.

MARIE EARLE: Although the hand-some ivory plastic case shown is not new, it contains a new lipstick color—"Vibrant Red." It is introduced at this time to wear with autumn fashions.

IMPERIAL RUSSE: Attractively-tailored, downy-soft pink powder mitt, through which fragrant body powder dusts freely is scented with Essence Impériale Russe. It makes its appearance in an ivory box having a thin strip of green going across the upper and lower section of the box.

MAXANDRE: Maju, a new perfume, is presented in a new and unusual package. Stoppers are decorated with sea shell flowers, tied with a bow and placed in a pillowed basket. Vials have patented inside screw stoppers.

MAXANDRE



IMPERIALE RUSSE



A Note on Canadian Angelica Root Oil

by DR. PAUL Z. BEDOUKIAN

W. J. Bush & Co., Ltd., Montreal, Canada

IN the fall of 1943 we received a small quantity of angelica roots from a local farmer who had cultivated them from seeds of angelica archangelica officinalis H. obtained from the Montreal Botanical Gardens.

Thirty-five pounds (fourteen pounds dry basis) of fresh roots were steam distilled in our laboratory and about 40 ml. of oil were obtained possessing the characteristic pleasant odor of angelica root oil with a strong musk background. Distillation of a 20 ml. sample of this oil through a one foot Vigreux type fractionating column gave the following results:

Fraction	Boiling Point °C	Per Cent Distilled	Refractive Index 25°C	Density at 25/4°C	Rotation
1 up to 155	2	1.4621	....	....	....
2 155-163	10	1.4683	0.846	— 8.6	
3 163-165	25	1.4709	0.846	— 7.2	
4 165-172	15	1.4729	0.845	— 4.6	
5 172-175	13	1.4754	0.845	— 1.0	
6 175-180	10	1.4786	0.871	— 0.6	
7 Residue	22	1.4930	0.934	— 14.0	

The general constants of this oil are listed in the table given below along with a few comparative data compiled from the literature on the subject.

It will be noted that the Canadian oil has all the usual physical constants except the optical rotation which is negative, whereas all other reported oils of archangelica offi-

cinalis have a positive rotation. This puzzled us and we got in touch with Dr. J. Rousseau, the director of the Montreal Botanical Gardens, who was kind enough to verify the roots as being true angelica archangelica officinalis. There appear to be no morphological changes in the plant growing in the Botanical Gardens in the spring of 1944 from the same lot of seeds. Consequently, the negative rotation of the oil may be attributed to climatic conditions. The possibility that the plant may have developed a new strain because of unknown conditions should not be overlooked, although it is highly improbable.

Several cases of change in rotation of oils obtained from plants grown in a different locality have been reported in the literature. This is of great interest, particularly if such a change were caused by the inversion of an optically active compound found in the oil. Unfortunately, the small quantity of Canadian angelica oil available made it impossible for us to investigate this point.

The chief constituent of angelica archangelica grown in northern Europe has been proven to be d- β -phellandrene (7) (8). The absence of l- β -phellandrene is not certain, however, since rotations of phellandrene from angelica oil that have

been reported are far below that of pure d- β -phellandrene (9). It is probable that angelica root oil contains both dextro and levo- β -phellandrene and in the case of Canadian oil the plant has synthesized a mixture predominating in l- β -phellandrene.

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Origin	Yield %	Density	Refr. Index	Rotation	Acid Value	Sapon. Value	Saponif. aft. Acet.	Solubility in Alcohol
French Oils								
Fresh roots (1)	0.4	0.8907	....	+6° 42'	7.2	52.2	....	2 vol. 90%
Usual oils (2)	....	0.863-0.875	1.479-1.482	+19 to +25	0 to 2.4	11 to 19	....	....
German Oils (3)	0.1 to 0.37	0.859-0.918	1.476-1.488	+16 to +41	0 to 5	12 to 39	30 to 75	5-6 vol. 90%
English Oil (4) (Dry roots & Rhizome)	0.66	0.916	1.4789	+4.8	....	....	....	7 vol. 80%
U. S. Oil (5) (Dry roots)	0.8	....	1.5348	....	4.34	....	....	....
Russian Oil (6) (Dry roots)	0.4 to 0.5	0.868	1.477-1.482	2.8	33.2
Canadian Oil (Fresh roots)	0.54	0.860	1.4768	—6.8	1.0	23.3	44.2	6 vol. 90%

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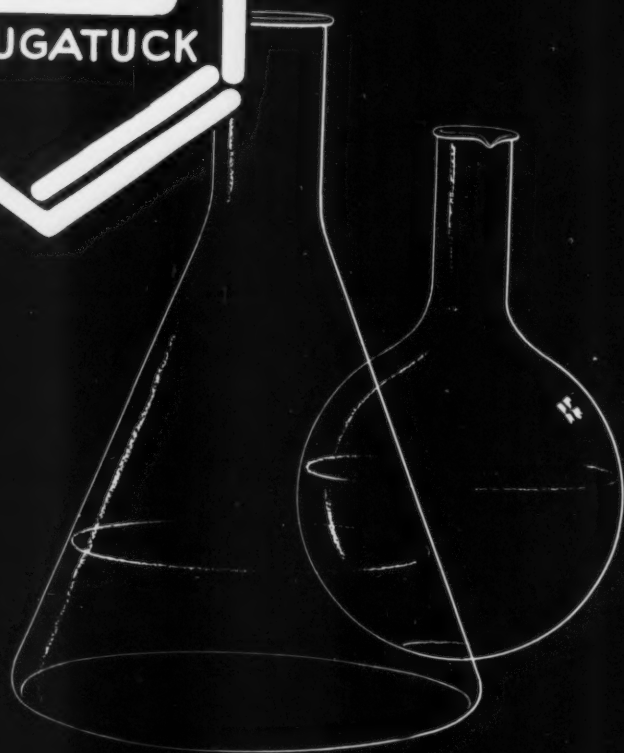
We invite your attention to this product as an addition to your Tincture Tonquin Musk to improve and exalt its value. The use of Musc Cibata will add individuality to your finished Perfume Oil.

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The Importance of Taste-Sense in Food Selection

*The study of experimental animals for the improvement of
the health and condition of human beings through feeding*

by ROBERT C. HOCKETT

Scientific Director, Sugar Research Foundation, Inc.

A FEW days ago I happened to visit the animal-house of a large pharmaceutical company at meal-time when a large number of white mice were being fed. The operator would seize a mouse in his left hand and by a skillful manipulation of the fingers make it open its mouth, whereupon a kind of syringe tube was inserted into its stomach and "lunch" in the form of a pale, nasty-looking fluid was injected by pressure upon a plunger. This operation appeared very efficient and mice passed down the line at fifteen-second intervals like Ford cars in pre-war Detroit.

The mice subjected to this forced feeding showed no particular signs either of distress or pleasure. They appeared sleek and well-fed as indeed they should, for the method is obviously the last word in efficiency. Guess work is completely eliminated. The exact weight of every food substance introduced is known down to the fraction of a gram and all such

foolishness as individual preference, taste or temperament is completely ruled out.

By such methods scientists have painstakingly determined exactly what is good for rats and mice. Over a period of many years they have discovered the thirty or so essential substances that must be supplied to these animals to make them flourish. They have even determined accurately how much of each substance is necessary for the optimum health, activity and longevity. At the present time, therefore, we probably know more about the feeding of rats and mice than any other animals on the face of the earth. We also know pretty well what ailments and illnesses will develop if any one of these essential substances is omitted.

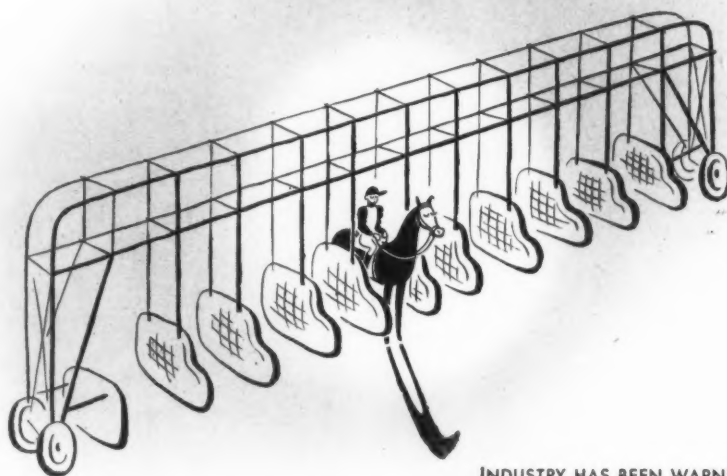
PURPOSE OF EXPERIMENTATION

The object of all this work was not of course, to make possible the cultivation of a race of super rats for their own sake. In so many par-

ticulars the requirements of rats are like those of man that the study of these experimental animals has been used as a short-cut to discovering how best to improve the health and condition of human beings through feeding. Perhaps the Quartermaster General would find his task very much simplified if he could have all the materials required for the optimum health and energy of the army cooked into a single soup and administered three times a day in a manner as efficient as that used in feeding white rats.

Human beings, however, seem to be far less tractable than rats. They do not want their food injected by a syringe even if it will make them healthy and efficient and this method is not likely to be adopted outside of totalitarian states. Eating is regarded as one of the pleasures of life as well as a method of acquiring fuel. Meals are social events as well as engineering operations; social custom and religious beliefs have sur-

DON'T BE LEFT AT THE POST-WAR PLANNING



INDUSTRY HAS BEEN WARNED by Jesse Jones, U. S. Secretary of Commerce, that the war may end suddenly and business should, therefore, be preparing now for the Post-war period.

The Committee for Economic Development reports that cessation of hostilities in Europe will release 80% of the nation's war production capacity for reconversion for civilian use.

Mr. Jones' warning and the report of the Committee for Economic Development should serve as a double spur to all Post-war thinking. When restrictions are lifted from war-prioritized cosmetic ingredients, don't be caught flat-footed and left at the post.

The merchandising, packaging and production experience and facilities of Allied Products may be a source of guidance at this time for the all-important, fast get-away and quick sales pick-up when war production barriers are raised. Arrangements for consultation can be made at your convenience, and without obligation, at your office or at the Allied Office in the R.C.A. Building in New York City.

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rounded food-taking with all kinds of tabus, symbolisms, ritual and metaphysical concepts. Tastes, customs and beliefs are often considered to be the bane of the nutritionist and the physician. The doctor can tell you how much you need of tryptophane, alanine, thiamine and copper to recover from an operation or to control rheumatism. He can write you a prescription for your food just as he would write one for medicine but these essential ingredients of the diet have to be translated into terms of cheese soufflé, pâté de foie gras, turnips and orange sherbert before the patient will do his part. In attempting therefore to transfer the knowledge gained from rats to the management of human beings it is not strange that many have come to regard taste as a bothersome obstacle that must somehow be subjugated or circumvented in making people eat what is good for them. The sense of taste has not been considered biologically valuable.

RATS SELECT GOOD DIET

Until recently it has been practically forgotten that even rats have taste, so easily are they managed by force. A few years ago, however, Dr. Curt P. Richter of the Johns Hopkins University School of Medicine conceived a very novel idea. He decided to find out what rats would eat if they were allowed to choose for themselves. In order to answer this question, he devised a rat-cafeteria. Seventeen separate pure substances were placed in a row of tubes so arranged that the rats could eat as much or little of each as they might desire and the amount of each material that disappeared could be read off from a scale at intervals. Pure sugar solution was used to supply carbohydrate, casein (milk protein) solution furnished protein, and olive oil served as a typical fat. Five mineral salts were supplied in separate tubes, seven pure synthetic vitamins, cod liver oil for the fat soluble vitamin, and water. The results of this experiment are very remarkable for these rats made an almost perfect selection of foods from the standpoint of the nutritionist. They grew as fast as rats kept on a standard and supposedly scientific diet devised by the professors. They were healthy and normally active, they reproduced, showed no signs of

deficiency and lived long lives. Even though an excess of food was always present they regulated their intake of calories almost perfectly according to their activities. Thus it appears that rats can and will select a diet as advantageous as any that can be designed for them by a scientist provided that they have access to all the necessary materials.

Now there are certain diseases and conditions in which greatly increased quantities of certain substances are needed. For example, if the adrenal glands cease to function on account of disease, the salt metabolism is disturbed and large quantities of salt are lost in the urine. This salt must be replaced by increased intake if the balance is to be maintained. Dr. Richter therefore removed the adrenal glands from some rats and placed them in his cafeteria to see whether some instinct would lead them to eat more salt. Again the rats proved themselves to be just as wise as the scientists for they increased their salt intake to just the right extent to maintain balance and keep alive.

TASTE SENSITIVITY

At this point Dr. Richter became interested in discovering more fully how the rats were able to choose the substance that they needed. Was it the sense of taste that led them to the salt or did they just notice that they felt better when they drank from the salt tube? The answer was found by destroying the taste buds on the tongues of some of these animals. Without a sense of taste they could not find the salt and soon died. *In this way it was shown that the sense of taste is the guide which enables rats to select the foods that will keep them in good health.* Moreover the taste sensitivity of animals was measured for the first time. Starting with extremely dilute salt solutions and gradually increasing the salt concentration it was possible to detect the point at which the salt-hungry animals could first taste the dissolved material, because at that point they began to drink the salt solution in preference to pure water.

These taste-sensitivity measurements proved that rats needing salt because of the removal of their adrenal glands, are *fifteen* times as sensitive to salt as normal animals. This discovery is of enormous importance

since it shows that taste sensitivity of rats becomes adjusted *by nature* in such a way as to make the substance needed by the animal *taste good*.

Many other similar experiments were made. When the parathyroid glands are removed so that the animal needs more calcium, the taste for calcium salts increased and larger quantities were consumed. The removal of the pancreas which renders the animal unable to utilize carbohydrate, caused them to lose their taste for carbohydrate and to eat fat and protein instead.

RESULTS OF VITAMIN STUDIES

The results of certain vitamin studies are especially interesting. To a certain extent, fat and carbohydrate are interchangeable as body fuels. It is true that a certain very small minimum of fat is essential to life and also that too much fat without carbohydrate causes a disturbance known as ketosis. Nevertheless, either fat or carbohydrate can be burned to supply energy. The burning of carbohydrate requires vitamin B₁ (thiamine) in order to proceed properly while the burning of fat does not. When rats are given abundant quantities of the vitamin they seem to have a very marked taste for sugar and get most of their energy from this carbohydrate, eating very little fat. If the vitamin is taken away they continue to prefer sugar for awhile, probably until their stored thiamine has been used up. Then they decrease their use of sugar and eat more olive oil. After two weeks of this vitamin deficiency they have almost no appetite for the sugar yet they keep their total calories level by increasing the consumption of fat. When the vitamin is restored they very promptly manifest a great appetite for sugar and almost stop taking olive oil. Considering the great accumulation of evidence that the taste instincts of rats are sound, it is reasonable to conclude that the most beneficial diet is one in which carbohydrates supply a large fraction of the total calories while a relatively small amount of fat is consumed and sufficient protein to replace wear and tear of body substances.

The discovery that the taste instincts of rats are such perfect guides to their needs promises to be

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very useful in determining what food elements should be increased during pregnancy and lactation and also in indicating the exact stage at which the increased needs occur and the extent to which the requirements rise above the normal level. Moreover new indications of the special dietary needs associated with various diseases may be uncovered.

✓ **FOOD HABITS OF HUMAN BEINGS**

The principal question however, that is raised by these studies with rats is the extent to which human beings have the same kind of instinctive guide to their needs. We have already admitted that the food habits of human beings are greatly influenced by psychological forces and social pressures. Rats, when hungry, will usually eat any available substance that can supply their wants. Under certain circumstances they are observed to consume fecal material or the cancerous growths of other animals. Such tastes are considered extremely revolting and depraved by human beings. But in this case also the rats have been shown to have a sound instinct. They eat feces when they are deprived of vitamin B₂ and in this way they recover the vitamin lost from their own bodies. Rats deprived of vitamin B₂ will live twice as long when allowed access to their feces than otherwise. Moreover, cancerous tissue has been shown to be richer in many vitamins than normal tissue.

On the other hand, the bodily needs of human beings may be denied by the operation of mental or emotional forces. A Mohammedan might starve to death in a warehouse full of sausages or a Hindu among a herd of steers owing to the force of religious tabus, and all of us would accept certain illness in preference to coprophagy or infantophagia.

Young children, however, who have not yet developed the prejudices of their elders, might be expected to show signs of the operation of an instinct for food selection. Of course we do not ordinarily give them any credit whatever for ability to choose their own food wisely. It is the firm conviction of nearly every mother that her primary duty is to make the children eat what is good for them in spite of all their resistance. Some parents use force, some bribery and some persuasion but practically all

of them confess that the great problem of parenthood is "getting food into their children." Dr. Clifford Sweet of Oakland, California, reports that he has asked many internes in the Children's Hospital "What will you tell the mother when she tells you her child will not eat?" The invariable answer is something like this, "I don't know but I suppose I'd tell her to make him eat the food he should have." Dr. Sweet says further, "The desire to feed some one is an inseparable part of the maternal instinct, and the belief (the stock in trade of quacks) that there is some method of feeding which, if followed closely, will prevent many if not all the ills of human beings dies hard."

"When questioned concerning the methods used to get a meal down which satisfies parental anxiety, the reply indicates coaxing or entertainment to take his mind off his food, so that eating may become largely passive, the application of sporadic and ineffectual force interspersed with prolonged and oft-repeated lectures on the great values of certain foods, especially vegetable. (I am quite certain that the average California child can't easily spell vegetable because the letters f-i-g-h-t come up out of his subconscious mind to confuse him)."

EXPERIMENTATION WITH CHILDREN

Dr. Clara M. Davis of Winnetka, Illinois, had the courage to see what would happen if young children were given a wide choice of foods and allowed to eat whatever they wanted. These experiments were carried out over a considerable period of time both in the Mt. Sinai Hospital in Cleveland and in the orthopedic ward of the Children's Memorial Hospital in Chicago. At first glance the results of this unusual freedom appear startling. Certain children showed a tremendous appetite for eggs, meat, cereal or some other food. An infant might eat as many as seven eggs at one time or four bananas. One three-year-old consumed nearly a pound of lamb at one sitting. These results would frighten most parents into abandoning the experiment and returning to the traditional controls. Dr. Davis had the courage to continue. She found that these egg jags or meat jags seldom lasted long and were soon balanced by a swing to other foods. Most parents believe

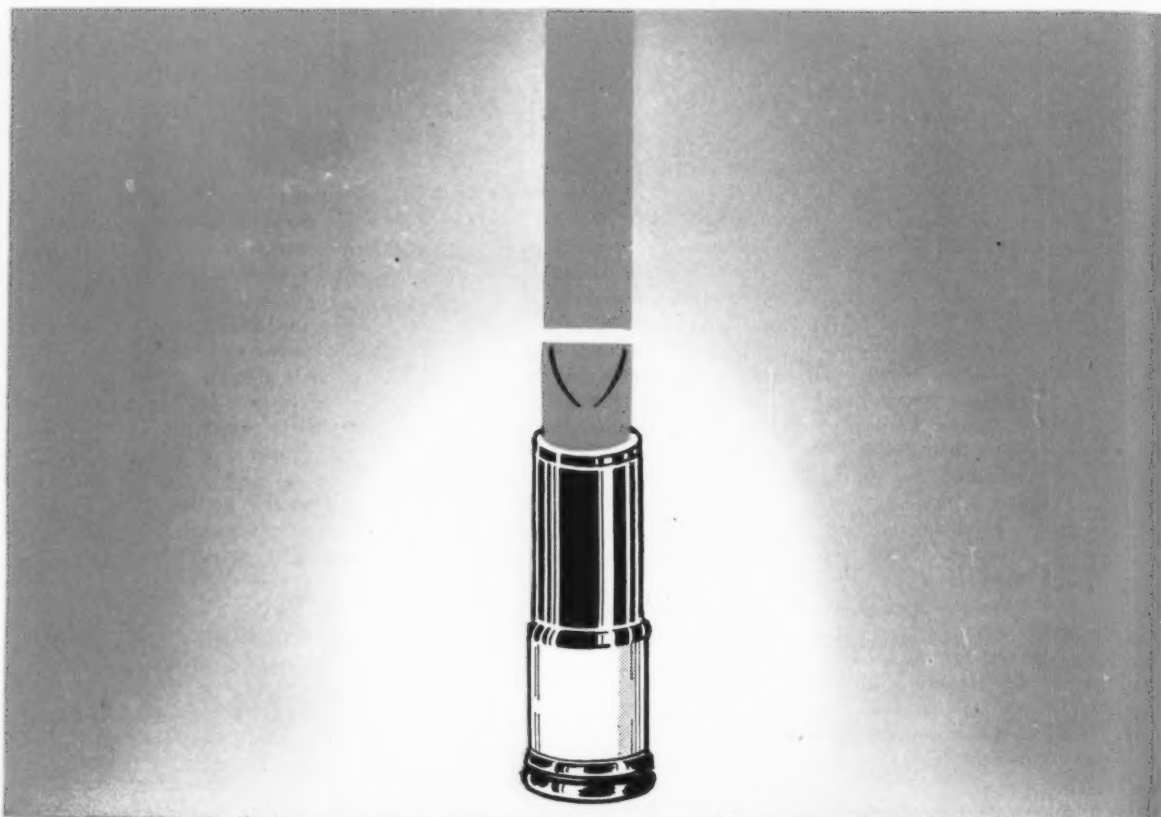
that children allowed such freedom would eat nothing but desserts. In this connection Dr. Sweet says, "During the first few days, desserts and other foods high in sugar may be eaten to excess, but the child soon returns to the other foods often omitting dessert for days at a time." In the course of six months the total food consumed in Dr. Davis' experiments was in every case remarkably close to the scientifically recommended number of calories per kilogram of body weight. Moreover the balance between fat, carbohydrate and protein was very close to that which is considered normal by nutrition experts. Even more significant is the fact that no infant ever gave evidence of discomfort or abdominal pain after eating. Constipation was totally absent, stools were normal in form and amount, the acidity of stomach contents was normal, blood calcium and phosphorus were excellent by all usual standards and growth was very satisfactory.

Several of the children had active rickets at the beginning of the experiments. At the end of six months they had all overcome this condition by means of diets freely selected. One child had such severe rickets that cod-liver oil was placed on his tray along with the numerous items supplied. During the first month of the experiment he voluntarily took 178 cc of this oil and the bone lesions were healed quickly.

The mention of cod-liver oil recalls other experiments. It is well-known that the vitamin D found in this oil is most urgently needed during the period of growth and bone-formation. Dr. Richter has tested over a thousand children between five and fourteen years of age. In the five-year-old group all the girls and 92% of the boys liked cod-liver oil and took it willingly. This liking gradually decreased so that only 30% of the fourteen-year-olds still reported an appetite for the oil. This decrease in liking parallels the decreasing need of the body for the vitamin and suggests that a sound instinct is functioning.

EFFECT OF EXPERIMENTS

The total effect of these experiments is to indicate that taste and appetite are far better guides to the selection of proper foods than we used to think. We must, of course,



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be cautious about carrying our conclusions too far until further experiments are carried out. Dr. Davis was too cautious to include some foods that are supposed not to be good for children. One wonders whether instinct might not lead children to use these foods in proper moderation or whether we might not find that they are really less harmful than generally supposed. If such instincts for good selection are as strong and are maintained throughout life as satisfactorily as seems possible, our great goal should be to provide every man with variety and abundance of attractive high-quality foods so that his natural appetite will have an opportunity to play its role.

It is very difficult to avoid the conclusion that appetite is the best digestive tonic known for healthy persons. Taste appeal and flavor are not mere luxuries. Human beings do not thrive on a system where "alles ist geordnet und vieles verboten" (everything is regulated and much is forbidden). The joys of food bulk large in life and the provision of taste and enjoyment in food is not a mere concession to human weakness but a sound biological principle.

(Note: Address delivered at the thirty-fifth convention of the Flavoring Extract Manufacturers Association.)

Mexican Vanilla Beans

It is unofficially estimated that the 1943 production of Mexican vanilla beans will be between 300,000 and 350,000 pounds, which represents an increase of about 50% of the preceding season.

This increase is believed to be due to additional plantings since 1939. Allowing four years for development, new plants are now coming into production. This increase planting more than offset the drought which was experienced during the growing season. This drought was experienced in the region of the State of Veracruz, where 95% of all Mexican vanilla is produced.

Recent exports of vanilla from Mexico are shown in the accompanying table:

Year	Amount
1940	470,424
1941	573,039
1942	145,980
1943	438,103

Higher Vanilla Bean Prices

Slightly higher prices for Bourbon vanilla beans by autumn or early winter are anticipated by well informed factors in the vanilla bean industry. It is doubtful that the arrival of the Bourbon vanilla beans which are now afloat from Madagascar will have any effect on the vanilla bean markets, as a very large quantity has been sold for arrival.

Early in the campaign, sales were made at rather reasonable figures, before the importers had any idea of their actual cost. Unfortunately, it was not possible to ship this vanilla directly from Madagascar to the United States. The goods had to be shipped on a small French boat from Madagascar to a South African port, and the additional freight charges, marine insurance, and handling charges in the South African port—not to say the rather sizable loss in weight that may be incurred in the shipment—would make a slight increase in the selling price of Bourbon vanilla beans later entirely justifiable.

Brazil Self-sufficient in Citric-Acid

The Fazenda Amalia plant of I. R. F. Matarazzo is now producing citric-acid crystals. The present output is 400 kilograms per day, but this is expected to be increased soon, eventually reaching a capacity of 1,000 kilograms per day.

The Sao Paulo district normally consumes between 6,000 and 6,500 kilograms of citric-acid per month, and it is estimated that the entire Brazilian consumption amounts to 15,000 kilograms. As the I. R. F. Matarazzo plant exceeds this amount even now, it is expected that the material will be available for export. Promise of a large potential trade is offered through the sugar producing capacity and citrus fruit output of Brazil.

Another producer in this field is Industria Brasileira de Productos Quimicos, Ltda., of Sao Paulo. Its monthly production of 7½ tons of liquid citric-acid is equivalent of about 2 metric tons of crystals.

Before the war Brazil imported most of her requirements from Europe, principally from Italy and Germany. The import of citric-acid in 1939 amounted to 207,692 kilograms.

Since that time imports have been much smaller. The United States has been the chief source of supply.

French Oceania Vanilla

It is estimated that about 150 tons of vanilla will be harvested in French Oceania in 1944. This estimate is for a crop larger than that of 1943, and is a result of plantings during 1941 and 1942.

Prices paid for cured beans in Papeete, Society Islands, during 1943 were considerably lower than those paid in 1942. The high prices paid in 1941 and 1942 were because Madagascar vanilla was not on the market.

The carry-over for 1943 is estimated at 40 tons.

Venezuelan Cocoa Production

Cocoa production in Venezuela has long been on the decline. Numerous reasons are responsible for this condition, among which may be mentioned declining world prices, disadvantageous exchange, competition with other growing areas, blights, poor transportation, and lack of any organization among the producers.

The drop in prices had become so serious by 1936 that the Venezuelan government subsidized the cocoa exporters. In 1941 the system was modified whereby the Central Bank buys the cocoa dollar received from the sale of cocoa at a higher rate of exchange than normal. The subsidy amounts to about 12%.

The war has not had much influence upon the cocoa industry. In 1938 Germany purchased 50% of the exports, and even in 1939 she was buying heavily. Now, the United States is the big buyer. Prior to 1939 this country was buying in small quantities, but since the war we have bought heavily; taking about 90% of total exports. It is estimated that 10% of production is consumed domestically.

Since Venezuela has no growers or exporters association it is only possible to estimate production. By this means, it is thought that a normal crop amounts to around 250,000 to 300,000 bags, or from 12,500 to 15,000 metric tons.

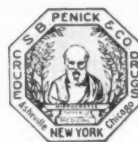
Indications are that the 1943-44 crop will be about 200,000 bags, or a decrease from the average.

IMPORTANT ANNOUNCEMENT



to the industry

by



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which in 1914 started the production of Perfume and Flavor Specialties—and the sale of allied products. Many of the Specialties have become favorably and widely known, in fact are in demand in many countries of the world.

This firm with its entire personnel has joined our *Essential Oils and Aromatic Chemicals Division*, but will continue in its own efforts to give its line of products a still larger field of consumption.

The growth of Compagnie Duval during past years proves the merit of its line of Specialties.

The increased facilities now at its disposal, in the importation, the manufacture and the sale of the allied products of our *Essential Oils and Aromatic Chemicals Division*, will greatly assist Compagnie Duval in the execution of all business entrusted to its care.

We ourselves, because of the continuous growth of our export business, are increasing our manufacturing facilities for the distillation and production of many items from the raw materials—of which we are domestic producers or large importers from countries of origin.

S. B. PENICK & COMPANY

Essential Oils and Aromatic Chemicals Division

H. G. Weicker, Manager

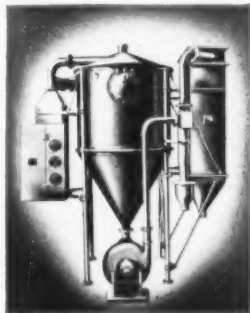


50 Church Street, New York

New Products, Ideas and Processes

New Type Spray Dryer

A new type spray dryer has been developed to be used in laboratory research, and in pilot plant operation on specific materials by Western Precipitation Corp.



Laboratory Dryer

It is furnished in black iron, stainless steel, or other alloys. It may be used with optional heaters, and other equipment permits flexibility. The complete assembly occupies a floor space of 5'-0" x 9'-8", with a headroom of about 10'-6".

This dryer is rated at an evaporation of 25 pounds of water per hour at an inlet to outlet differential of 300° F. Varying conditions may cause this figure to fall above or below rated capacity.

Optional equipment includes an air filter and sealed glass sight ports for inspection purposes. Electrical, compressed air and feed line connections are required.

Glyceryl monostearate in beads

A white edible glyceryl monostearate in bead form which is said to be completely dispersible in hot water and completely soluble in alcohols and hot hydrocarbons, known as Bemul, is announced by the Beacon Co. Because of its non-toxicity, purity and freedom from alkalis the manufacturers point out that it should be of particular interest to cosmetic manufacturers. As an emulsifying and thickening agent it is claimed to offer several advantages. The viscosity of its emulsions vary from a thick cream to a thin liquid depending upon the solid concentration. It is said to be equally useful as a suspending agent for organic and

inorganic material in aqueous solutions. Samples will be sent on request.

Isopropyl alcohol neutralizer

A new product that is made to depress the objectionable odor of isopropanol without perfuming known as Neutralizer 1A No. 1 is announced by Magnus, Mabey & Reynard Inc., 16 Desbrosses St. New York 13, N. Y. This oil is stated to have lasting and powerful coverage properties and is said to cause no distortion of subsequent additions of perfuming ingredients. Tests, it is claimed, show that the use of this neutralizer makes possible a reduction in the amount of perfume oil required to provide the odor identity common to the product. Testing samples will be sent to anyone interested.

Transwrap packaging machines

Transwrap packaging machines made by the Stokes & Smith Co., to supply protection visibility, eye sales appeal and low unit cost, are adequately described and illustrated in an attractive folder just issued by the company. The machines are made to form, fill and seal the package, provided it is made of cellophane, pliofilm, heat sealing paper or foil.

New cold wave ingredient

A new cold wave ingredient and other thioglycollate products for the cosmetic, biological and drug industries are now being made by the Stanton Laboratories in its new plant and offices in Wyncote, Pa.

Metal Caps for Cake Make-up Jars

Metal caps for cake make-up opal jars in various finishes and any desired color are now being made and supplied by Leshin & Wald.

Wm. J. Stange Co. 40 Years Old

In celebration of its fortieth anniversary Wm. J. Stange Co. has published an interesting, a colorful and an informative booklet of 32 pages entitled "Forty Years of Progress." The booklet is dedicated to the founder, the late William J. Stange. Illustrations include those of the ex-

ecutive staff, the production and research staff and field representatives. Then a brief resume of the development of the concern is given. Seasoning of Food Products and the part the company has played in the development of this field; and the Coloring of Food Products are each covered in an interesting and informative way. The booklet concludes with a discussion of what may be expected in the food field after victory. A copy may be had for the asking.

Soaped Cloth

Charles F. Hubbs and Co. has placed a soaped cloth on the market recently. Since the cloth is woven it may be die cut into any desired shape, and may be tinted and scented.

So far this type cloth has found rather limited use in the cosmetic industry. Its makers claim that it has value in a travel kit, in pipe fittings, and as an anti-friction unit.

New Imitation Maple Flavor

Standard Synthetics, Inc., 30 West 26 St., New York, N. Y., has now put on the market an imitation maple flavor for which they claim unusual success. Those interested may obtain samples without cost by writing direct.

New Catalogs

Merck & Co.'s new price list of industrial chemicals has been printed. Copies may be obtained upon request.

The latest edition of the Packaging Catalog is available in the 1944 issue, just published. The catalog contains data on war-time packaging, protective wraps, new shipping packages, etc. It contains 750 pages, and sells for \$2.50 per copy; foreign \$3.50.

The Custom House Guide, 1944 edition, in its 83rd year, is now being distributed. The annual contains over 1500 pages and is thumb indexed. The Guide is supplemented monthly by the American Import & Export Bulletin, and by Air Transportation. The cost of the Guide, including the Bulletins and Air Transport, is \$20, plus postage.

Dodge & Olcott Co. has just issued its latest wholesale price list. It may be obtained free by writing.

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Here and There Among Our Friends

► Gilbert D. Miles, son of Frank J. M. Miles, has been appointed manager of the New Products Department of Colgate-Palmolive-Peet Co., Jersey City, N. J., according to announcement by Roy W. Peet, vice president. In his new position Mr. Miles will be responsible for studying new product fields and for correlating the work of various departments in new product development. After studying at the University of California, where he specialized in chemistry, supplemented with graduate courses in the same subject later at the Brooklyn Polytechnic Institute, Mr. Miles carried on his studies in Paris and Grasse, France, in the essential oil and aromatic chemical branches. While in Grasse his work was pursued in the well known houses of Roure-Bertrand Fils and Tombarel Freres, during the years of 1927 and 1928. Returning to the United States he became associated with the production departments of Max Factor & Co. in Hollywood and the Vimay Co. in Los Angeles. While on the Pacific coast he designed and supervised the installation of the world's first plant for the production of natural essence of gardenia. Returning east he joined the Colgate-Palmolive-Peet Co. in 1937, where he conducted fundamental research of the physical chemistry of detergent action and foam stability, publishing several notable contributions on these subjects in scientific journals. He is the holder and co-holder of several U. S. patents and is a member of the American Chemical Society, the A. A. A. S. and the New York Academy of Science.



Gilbert D. Miles

► Col. William O'Dwyer, formerly District Attorney of Kings County, N. Y., has been designated by the President as head of the Economic Section of the Allied Control Commission for Italy. He has the personal rank of Minister. He represents both State Department and FEA in economic and other matters in Italy. OPA Retailers' Task Committee, composed of 16 major retailing elements of the country, has as members J. W. Dargavel, Chicago, National Association of Retail Druggists; and F. J. Griffith, New York City, National Association of Chain Drug Stores.

► Victor E. Williams, of the Monsanto Chemical Co. was recently presented with a white cheelin gavel, in recognition of services performed over the past year as chairman of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, Inc.

► Walter V. Tobin has been elected vice-president of Hirestra Laboratories, New York, N. Y., makers of Endocrine and other toiletries.

► Pierre Bouillette, of Companhia Gessy S. A., Sao Paulo, Brazil, is receiving congratulations on the birth of a son, Bernard, who arrived June 7.

► Charles C. Myers, Southern Californian sales manager for W. J. Bush & Co., is well known throughout that territory, where he has represented the company since 1913. This year he



Charles C. Myers with an average catch

managed to get his vacation at Crowley Lake in the mountains, a day's journey from Los Angeles, where he enjoyed fishing. Rainbow trout are

evidently in good supply judging from the accompanying photograph of Mr. Myers. In fact, those who fish in the Crowley lakes seem to think nothing of catching five pounders.

► Leonard H. Schultes, son of Martin F. Schultes, founder and chairman of the BIMS of New York, has been commissioned an ensign in the U. S. N. R. He left July 28 for indoctrination school at Fort Schuyler; and in eight weeks will be assigned to special service. Ensign Schultes is a graduate of the Wharton School of Commerce and Finance, University of Pennsylvania and is a member of the Alpha Sigma Phi fraternity. While in college he was advertising manager of the Pennsylvanian, the daily newspaper. During his junior year he was married to Miss Genevieve Hyatt and they now have two children. Mr. Schultes joined the New York office of the Hewitt Soap Co. following his graduation, as a special representative calling on the drug and department store trade in metropolitan New York. While in the Navy he is on leave of absence from that position.



Leonard Schultes

► Frank R. Dinwiddie, president and treasurer of the Hewitt Soap Co., Dayton, Ohio, has been elected vice-president of the Dayton Control of the Controllers Institute of America, a technical and professional organization of controllers.

► Charles V. Sparhawk, Sparkill, N. Y., head of the company that bears his name, suffered third degree burns as a result of throwing hot metal drums out of the window of a blazing barn on his property recently.

► M. E. Putnam, vice-president and member of the Board of Directors of the Dow Chemical Co., Midland, Mich., received the honorary degree of Doctor of Science from Albion College, Albion, Michigan, recently.

Dr. Putnam is a graduate of Albion College, and of the University of Michigan. He is a member of Phi

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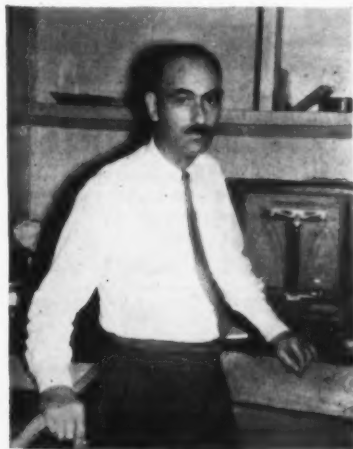
Dr. Putnam started work with the Dow Chemical Co. in 1915 as a research chemist.

► Jesse L. Hopkins, president of J. L. Hopkins & Co., has been elected an honorary vice president of the New York Board of Trade in recognition of his many years of distinguished service to that body and as a symbol of the esteem in which he is held by the Board.

► Roscoe C. Edlund, manager and secretary of the Association of American Soap and Glycerine Producers, Inc., has been elected a vice-president of the Trade Association Executives in New York City. He is also the organizer of the National Fat Salvage Campaign.

► Eliner Guthrie McVickar, for the past nine years associated with Harper's Bazaar, has been appointed advertising manager and director of Dorothy Gray, New York, N. Y. Prior to joining Harper's Bazaar she was employed in the advertising department of Saks-Fifth Avenue, New York, N. Y.

► James H. Hall who has been appointed director in charge of cosmetic raw materials research and sales for Wittaker Clark & Daniels, Inc. has had diversified experience in the industry which especially fits him for his new tasks. In fact, he represents the second generation of his family to be intimately identified with the in-



James Hall in his laboratory

dustry; for his father, the late George Hall, was formerly perfumer for the United Drug Co. of Boston, Mass. After finishing his education, Mr. Hall joined the staff of Compagnie Parento, where he served under his uncle, the late Addington Doolittle. Following this he was for the last ten years director of research for Pond's Extract Co., Clinton, Conn., where he gained broad experience in the most effective use of various types of raw materials. In his new position his cumulative experience in the raw materials and finished goods branches of the cosmetic industry promises to be helpful in the addition of new products and in the expansion of the business. Mr. Hall is married and lives in New Rochelle, N. Y. His chief hobby, next to business, is amateur photography.

► William H. Hottinger, Jr., assistant secretary and counsel for Bowey's, Inc., Chicago, Ill., flavor manufacturers, has received word that his son, Kenneth Hottinger who is in the armed forces is now in England.

► Thomas H. Brown, Jr., has been elected secretary and general counsel of the American Home Products Corp., Jersey City, N. J. Mr. Brown is a Harvard alumnus and joined the organization in 1937.

► Dr. Arnold Beller, vice-president of the Centflor Mfg. Co., New York, N. Y., and Mrs. Beller are receiving congratulations over the arrival recently of Robert Beller.

► Dr. David G. Salten has been appointed chief chemist of Maurelle Products Co., New York, N. Y. Dr. Salten is in charge of research and product development, and is in control of raw materials and finished products.

► Vincent Tysdal, young son of Elmer Tysdal, chief of the Cosmetic unit in WPB, after more than a year's training in several camps, has been spending 16 days with his parents in Washington, to the great pride of his father. The young soldier is in the Tank Corps, and fights within one of the metal monsters. He returned from Washington to Camp Campbell, Kentucky, before going overseas.

► Herbert Scott has just been appointed general manager of Tone Laboratories, Inc., New York, N. Y.



Herbert Scott

Previously, Mr. Scott was production manager of Schiaparelli Parfums, Inc., and prior to that was general manager of Smith & Scott, Bermuda, B.W.I., which manufactured Lili Perfumes. Mr. Scott is an alumnus of the Massachusetts Institute of Technology and with his father-in-law in Bermuda he undertook the cultivation of certain flowers for the production of essential oils useful in the perfumes put out by the company. The original package of Lili Perfumes attracted much favorable attention and the line enjoyed success.

► Max van Pels has opened offices at 441 Lexington Ave., New York, N. Y., for the importation and exportation of drugs, chemicals, botanicals and gums. He has been connected with the chemical industry for over 30 years.

► William L. Sims, II, who was head of the OPA Chemicals and Drug Branch, Price Section, resigned late in June to retire to his orange groves in Florida. He was the chief liaison for the cosmetics and toiletries industry in OPA. Mr. Sims formerly was an official of Colgate-Palmolive-Peet Co. Lester Chandler, head of the price section of the Rubber Branch, temporarily takes over the Chemicals and Drugs Branch, together with the Rubber Branch; but Deputy Administrator Brownlee wishes to emphasize the appointment is temporary, and does not presume the consolidation of the branches has been effected.

► Burton Riordan, a member of the sales-staff of the Bristol-Myers Co. for the past 19 years, has been named Branch Manager of the company with headquarters at Dallas, Texas, effective in July. By this appointment he replaces Claude M. Crawford, who is retiring after 30 years with the company.



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WASHINGTON PANORAMA

by ARNOLD KRUCKMAN

After meeting with the WFA-OPA Essentials Oils Industry Advisory Committee in New York, and a subsequent special meeting there with essential oils importers as a whole, A. L. Kalish returned to Washington, and there was later word that the original report of the WFA-OPA Essentials Oils Industry Advisory Committee was tabled and by vote of those present the suggestion of the Government was adopted which arranged distribution of imported lemon oil, and any other essential oils brought in by Government purchase, on the basis of imports by established importers during the years 1937 to 1940 inclusive. The original report would have based distribution on both imports and domestic transactions. As the adjustment now stands the importers will receive that proportion of any oil imported, or made available by substitution of imported oils, equal pro rata to the average percentage they distributed during the base years. Thus, if the average for the base years is 500,000 pounds per year, and the importer distributed 5,000 pounds, he will be entitled to distribute 1/10 of any volume imported while the arrangement is in force. In the case of the lemon oil brought from Italy recently, 100,000 pounds, this theoretical importer would be entitled to distribute 1,000 pounds. Actually, the lemon oil brought from Italy, after prolonged tests in New York at the Government laboratory, was delivered to the Army. But in its place suppliers of domestic lemon oil will be directed to provide each importer of record during the base years that proportion of 100,000 pounds which was his percentage of the average annual importation during the pre-war base years. If domestic distribution had been added to the importations some percentages would have been far

greater, and some would have been far smaller.

ESSENTIAL OILS

Reports lately indicate that production of peppermint oil may fall substantially below optimistic expectations. The drought and other untoward climactic conditions have seriously interfered with the crop. Spearmint oil is now the subject of an out and out price ceiling conflict between the large users and OPA. The Government agency does not see eye to eye with the users who have made an application for a reduction of the price ceiling. It is understood the difference in opinion between price executives and the users has been taken to the ultimate authority in OPA, and that the decision now depends upon Administrator Bowles. At this writing no indication is apparent what the decision may be.

The situation in regard to other essential oils, derived from foreign sources, particularly those which come from North Africa, which area is under Army control, is in process through FEA, though progress is very slow. Shipping space to bring essential oils from foreign ports, not under Army control also has been the subject of numerous appeals and requests that have been addressed to various persons in Washington. Those making appeals have generally been referred to C. Peter Crowley, the Chief of Foreign Supply Section, Office of Civilian Supply, in WPB, who officiates in arranging shipping space for importers entitled to the privilege. Pete Crowley, a genial and extremely capable person, may be found in Room 2231 in the Social Security Building.

Glycol ethers, used in cosmetics, are freer because the military have less need for them. Their control was transferred from Order M-336 to

Order M-300, and the small order exemptions were raised from 400 pounds to 2,000 and 4,000 pounds, according to the specific glycol ether. Monobutyl has been raised to 4,000 pounds, monomethyl to 2,150 pounds, monoethyl to 4,100 pounds, and monoethyl of diethylene glycol to 2,300 pounds. Phosphorous for use in dentifrices, was cut 20 per cent by Chemicals Bureau of WPB.

BRAZILIAN MINT OIL

The mint oil produced from the crop recently harvested in Brazil is reported to have amounted to approximately 200,000 kilos, which will yield from 80 to 100 tons crystals. Total production for the past year is estimated at 150 tons crystals, less than expected. It is not believed exporters will be able to fill their contracts. It is reported publicity in the United States stressing the dependence of North America on the Brazilian crop for its menthol has forced up the price of mint oil and crystals. The information here is that the announcement of OPA ceilings on menthol started a hoarding movement in Brazil. Producers hid oil in cans to prevent the Brazilian financing agency from determining how much is available. One large operator is reported to have launched an effort to corner the market. It is assumed in Brazil that he is either preparing to sell his stockpile through his organization in New York, or that he is cornering the menthol to force OPA to raise the ceiling. Prices in Brazil for oil vary from \$310 to \$320 per kilo at points of production. Crystals are priced at \$630.60 per kilo in Sao Paulo warehouses and \$667.50 per kilo f. o. b. Santos. Another report credits three large New York importers and users with the acquisition of contracts for the delivery of 2,100,000 pounds of menthol between

them. The significance of this report, if true, is startling in the light of the fact that our annual consumption averages normally from 400,000 to 450,000 pounds per year. CIAA reports that Chile is now engaged in creating an exportable surplus of peppermint as well as lavender. Chile already is exporting eucalyptus oils, and is rapidly developing a supply of spice plants. CIAA has word that petitgrain is being commercially produced with export in mind in Paraguay and Argentina. Colombia expects to offer various essential oils.

FATS AND OILS

Department of Agriculture forecasts "a material reduction in the total output of fats and oils from domestic materials from the 11,500,000,000 pounds anticipated in 1943-44. The outlook is for a tightening of the present comparatively easy situation in fats and oils, beginning next Fall." Every manufacturer in the business is represented on the Committee appointed by OPA to aid in formulating prices for fatty acids used as cutting and cooling oils in manufacture of soap and chemicals. Eugene W. Brockenbrough, Charlotte, N. C., has been appointed chief of the Fats and Oils Branch of the OPA Rationing Division. He succeeds Irving C. Reynolds, who has gone to the Quartermaster General's Office as special adviser. WPB has announced that more beeswax may be expected from Turkey and India, in addition to the supply now provided by South America and Africa. More shipping space is promised for beeswax and carnauba wax from Latin America. Importers who bring beeswax from countries other than the Americas or Africa must submit their maximum prices to OPA for approval.

All paper and paper products are bound to become scarcer. WPB has announced an intensified national paper salvage drive as soon as school opens. The goal is 8,000,000 tons collection per month. More restrictions in containers may be expected.

HARDSHIP RELIEF

OPA has announced producers of soaps, cleanser and cosmetic, whose factory costs have risen to the point where they can no longer sell at March, 1942, levels are entitled to apply for adjustment of ceilings. The action, effective August 3, applies

particularly to those who would lose business because customers resort to higher cost sources of supply; those whom WPB or some other Government agency have forced to produce certain quantities of certain commodities; and those who produce an essential material which is inadequate in supply, "but in connection with which production orders are not practicable." In effect this action revives the provision which enables those who can prove substantial hardship to apply for relief. Applications for adjustment should be made on OPA Form 692-992. The Form may be had at the office of the OPA Chemicals and Drugs Price Branch, Washington, D. C.

Special boxes to use to send gifts overseas to members of the armed forces have been authorized by WPB, priority ratings for their acquisition being granted to retailers and box jobbers. Those who wish to obtain the boxes must file WPB Form 2408 with the WPB Paperboard Division. The Form may be obtained at WPB field offices. Applications must be filed quickly in order that the boxes may be available for mailing between September 15 and October 15, the overseas mailing period. The boxes will be distributed in relation to the geographical origin of the number of individuals serving overseas. The priority for presentation to the mill is used by the retailer or the jobber when he purchases the boxes. The retailer or jobber in turn may sell or use the boxes as a service item without further regulation. Retailers may sell the boxes or supply them without charge in preparing the customer's purchases for overseas mailing. The use of the boxes is strictly limited to overseas mailings for members of the armed forces. They may not be used to display of preselected gifts. Parcels may not exceed 5 pounds or 15 inches long or 36 inches in combined length and girth. Not more than one parcel per week may be sent by any person to the same person overseas.

Department of Agriculture has expressed keen interest in the prize herd of Guernsey cattle maintained in the mountains of North Carolina by Dr. Eric C. Kunz, head of Givaudan-Delawanna, Inc. The herd of over 100 holds the record in North Carolina for the production of milk and butter fat. Agriculture attributes

some of Dr. Kunz's success to his knowledge of the cattle raised in the Swiss mountains, where he was born.

It was forecast that the toiletries and cosmetic industry will be awarded another allocation of 150,000 pounds of lanolin in September.

MANPOWER A STUMBLING BLOCK

It is now probable the chief stumbling block to the Nelson plan will be manpower. Literally hundreds of thousands of workers are now needed in war production plants. The acute lack of workers, thousands of whom have withdrawn because they have heard the war is practically over, has impelled WMC and Selective Service to investigate those of all service ages who were deferred because they were classified as essential. Men who cannot justify the essentiality of what they are doing will be inducted. This tightening of the manpower control apparently has hit some phases of the toiletries and cosmetics and allied industries. Appeals have come in from various sources. The manpower problem apparently has not been solved, despite the controls set up by McNutt. The difficulty is in applying the pressure that will squeeze those who are not working, or who are not employed in war work, into the war jobs. Usually the war jobs are located at a distance, and apparently few workers will voluntarily migrate. The National Service Act makes Congress shudder; but if something is not done to spur the workers to move voluntarily to the places where they are needed by September or October, there is no doubt the armed services will put the fire under Congress, despite the Election.

SURPLUS WAR PROPERTY

Few people in the toiletries, cosmetics, and flavors industries appear to realize that the disposal of surplus war property is important to them right now. Government has already sold over \$500,000,000 worth of war goods and daily is selling more. It is estimated there is a potential of at least \$15,000,000,000 worth of goods consisting of finished goods, equipment, industrial facilities, and semi-finished or raw materials which will be useful in the daily life of the nation, which will be for sale.

U.S.I. CHEMICAL NEWS

August



A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries



1944

New Modified Alkyd Offered by U.S.I. for Specification Paints

S&W Aroplaz 1375 Meets W.P.B.
Phthalic Anhydride Restrictions

Announcement of a new ester gum-modified alkyd resin, for use in the specifications recently issued to meet current W.P.B. restrictions on phthalic anhydride, has been warmly received by formulators of protective coatings.

The new War Production Board directive, Order M-139, Direction No. 2, by further limiting the percentage of phthalic anhydride in the vehicle solids components of various specification coatings, has, in effect, made obsolete many government agency specifications. However, alternate specifications requiring resins of lower phthalic content have been issued; many of these, like those shown below, call for semi-alkyd resins, or alkyd resin-ester gum varnish blends.

U. S. I.'s new resin, S & W Aroplaz 1375, is a composite ester gum-modified alkyd specifically developed to meet these new specifications; it is now being used effectively as the total vehicle solid component in such specifications as these:

ARMY SPECIFICATIONS

- 3-171 Grade II, Primer, Synthetic, for Ferrous Metals
- 3-172A Grade II, Primer, Synthetic, Re-finishing
- 3-173 Grade II, Enamel, Synthetic, Lustreless
- 3-174 Grade II, Enamel, Synthetic, Semi-Gloss
- 3-175A Grade II, Enamel, Synthetic, Gloss

NAVY SPECIFICATION

- 52-P-26 (Amend. of 6/1/44) Primer, Metal (Brown)

Polymerized to a high viscosity, S & W Aroplaz 1375, permits formulation of acceptable products containing maximum volatile content. This permits coating manufacturers to produce specification finishes at minimum raw material cost, with no sacrifice in quality.

Samples of the new resin and additional information on formulation can be obtained by writing to U. S. I.

Startling New Uses Loom for Today's "Miracle" Drugs

Broad Potentialities Seen in Recently Reported Cures with Penicillin, Atebrin, Sulfadiazine and Other Chemicals

With the discovery, in 1935, of the remarkable medicinal properties of the sulfonamides, chemotherapy came back into the limelight, renewing a march which has since turned into a veritable parade of new life-saving pharmaceuticals.



Official Photo U. S. Army Signal Corps

Military points ranging all the way from stencil paints to the olive drab which marks the jeep the world over are being formulated with S & W resins. Of particular interest now is U. S. I.'s announcement of the new resin, Aroplaz 1375.

Penicillin Inactivator Facilitates Culture Study

Cultures taken from patients who have been receiving penicillin treatment can be materially improved by a new penicillin inactivator. The inactivator completely destroys the penicillin in the culture, thus permitting the culture to develop naturally.

Extracted from strains of *Staphylococcus aureus*, the inactivator is obtained by precipitating 24-hour saline cultures with acetone. After one change of acetone and two of ether, the precipitate is dried, powdered, and stored at room temperature.

Glamorized as "miracle drugs" by the popular press, penicillin, atebrin, sulfadiazine, the vitamins, and other chemical compounds have won quick fame because an energetic chemical industry was able to push them into large-scale production almost overnight.

In less than a decade, production of sulfa drugs has leapt past the 10,000,000-pound mark. Atebrin, war-essential substitute for quinine, is now being produced at a rate which dwarfs previous world production of quinine. Vitamin production has skyrocketed into astronomical figures. And—when the full story can be told—the volume production of penicillin from a lowly mold will go down as one of the industry's big achievements.

New Cures with New Drugs

While volumes have been written about the capabilities of these new pharmaceuticals, one need only watch the current news to gain an idea of the unlimited horizons ahead. Penicillin, for example, finds a new use in the treatment of psittacosis, the deadly "parrot fever". Sulfadiazine is used to fight meningitis. Arthritis, widespread and stubbornly resistant to treatment, is now being successfully treated with penicillin.

In the field of food allergies, vitamin C is suggested as a cure. Pneumonia and empyema afford two further examples; formerly unaffected by penicillin, these diseases now yield to intrapleural injections. Even the irksome mosquito seems to be losing ground, large doses of vitamin B₁ being reported to immunize people against its bite.

U. S. I. Chemicals at Work

In the field of drug synthesis, U. S. I.'s ethyl acetoacetate is widely used in the preparation of such products as atebrin, vitamin B₁, sulfamerazine, antipyrine and amidopyrine. Diethyl oxalate is used in the manufacture of gamma-pyrones; ethyl sodium

(Continued on next page)

Ether-Air Mixture Proves Best for Cold-Weather Diesel Starting

Recent research has shed new light on the question of whether high cetane fuel blends give better cold-weather starting than "boosters" introduced into the diesel engine's air stream. The findings, reported in the S.A.E. Journal, are overwhelmingly in favor of the latter method.

The most effective fuel blend tested was obtained by adding 25 per cent ethyl ether to the diesel fuel; this gave far better results than did blends using butyl or hexyl ethers.

But even ethyl ether only brought the starting temperature down to -5 deg. F.

When ethyl ether was directly introduced into the air stream of diesels, however, they started at temperatures down to -40 deg. F. In addition, partial combustion occurred immediately, relieving the battery of the major part of the starting load. The research further indicates that fear of fire from this method, expressed by manufacturers of crankcase scavenging diesels, has little basis in fact.



From hospitals at home to front-line first-aid stations, U. S. I. Pure Alcohol stands guard against infection. Perhaps the oldest medical chemical, alcohol is still the most widely used.

Alkyd Resins Employed in New Calking Compound

A permanently plastic, non-shrink'g, non-hygroscopic calking material suitable for sealing joints on aircraft, fuel tanks, etc., is described in a recent patent. An unmodified sebacic acid alkyd resin is the base in which an inert filler, formed mainly from asbestos filler and ground mica, along with a small percentage of zinc chromate, are mixed.

Zein Acetate Produces Strong, Flexible Films

Protective coating films of zein acetate are claimed to be stronger, more flexible, and more water-resistant than films of zein itself or plasticized zein, according to a British patent on a process for making the acetate.

The acetate differs from zein in that it is insoluble in ethyl alcohol. But it is soluble in mixtures of 95% ethanol with butyl acetate or ethylene glycol monoethyl ether. The mixture should contain 50 to 80% ethanol.

In the description of the process, acetic anhydride, acetic acid, acetyl chloride, and ketene are mentioned as suitable acetylating agents. Sulphuric acid or anhydrous sodium acetate are employed as catalysts.

New High-Antiknock Fuel

A recently granted patent describes a high-antiknock motor fuel consisting essentially of isoparaffinic motor fuel hydrocarbons, such as those produced by the alkylation of isoparaffins. The hydrocarbons are of the type that may be produced by alkylating isoparaffins with normally gaseous olefins and an aliphatic ester of formic or acetic acid, such as butyl acetate.

New Alternate for Shellac in Rubber Preservatives

A new compound, designed to take the place of shellac in rubber preservation lacquers is claimed by a German article to be both non-cracking and non-sealing. Vinnapas, a polyvinyl compound, is dissolved in either alcohol, hexane, acetone, ethyl acetate or butyl acetate. Pigment and resin are then added to produce a high-gloss, strongly adhesive black paste.

New "Miracle" Drugs

(Continued from preceding page)

acetone oxalate in making acetypyruvic acid; acetone as a source of chloroform.

Ethyl acetate and ethyl formate are among the starting materials in the manufacture of sulfadiazine, Indalone, U. S. I.'s powerful new insecticide, serves as a vital ingredient in the government's new insect repellent.

Alcohol, ether, acetone and other solvents are used on a large scale in all types of extractions. Particularly important is the use of amyl acetate in the extraction of penicillin. Vitamins, hormones, alkaloids, glucosides and other drugs are still extracted in large amounts from natural animal and vegetable sources; here U. S. I. solvents are vital tools in extraction and purification. In analytical work, indispensable to control of both production and administration of pharmaceuticals, the same solvents are constantly used.

End-Product Uses

U. S. I. products are found not only in intermediate stages of pharmaceutical manufacture, but also in end products. Ether and ethylene are used in anesthesia. Ethyl formate is used internally as a remedy for diarrhea, as an inhalant for respiratory affections, and externally as a rubefacient. Urethan is used as an anti-spasmodic for convulsions, restlessness, etc., and as an antidote for strychnine, resorcinol and picrotoxin poisoning. It is also used as a co-solvent to increase the solubility of quinine hydrochloride in water. Alcohol, ether, and acetone are used in the manufacture of pill coatings. Sulfonamide films useful for treating burns and surface wounds have been prepared by spraying 50% acetone or alcohol emulsions of the sulfa drug with methylcellulose, triethanolamine and sorbitol on a glass surface and allowing to dry.

Alcohol is perhaps the most widely used solvent in the medical profession. Its germicidal properties make it invaluable in sterilization. It is also widely used as a vehicle for medicines and as an ingredient in ointments, lotions, antiseptics, etc.

Nerve Block

Alcohol, too is finding increasing use as a pharmaceutical end-product in therapeutic nerve block. A recent application of this technique is in the treatment of blood vessel spasm, a disease of old-age, which is both painful and dangerous. Where the age of the patient makes surgery hazardous, 95% alcohol is injected around the sympathetic nerve, bringing immediate relief.

TECHNICAL DEVELOPMENTS

Further information on these items
may be obtained by writing to U.S.I.

A new resin adhesive designed to bond copper or copper alloys together is announced. According to the maker, it also bonds copper to other metals or non-metallic structural materials when co-bonding agents are employed. (No. 837)

U S I

Continuous plastic sheeting, up to 54 inches in width, is now produced in thicknesses from .030 to .25 inches. The surface is described as workable and unaffected by contact with gasoline, oils, acids, most alkalis, alcohol. Suggested post-war uses include luggage, wall paneling, flooring, table tops, house furnishings. (No. 838)

U S I

A new artificial leather, reported to exceed natural leather in strength and weather resistance and to be mildewproof, is announced. (No. 839)

U S I

Availability of a humectant for civilian use is announced. Valuable for stabilizing the moisture content of foods, cosmetics, adhesives and a wide range of other materials, the product is a hexahydric alcohol said to possess extremely low volatility, neutral reaction, bland taste, and other desirable properties. (No. 840)

U S I

Permanent sealing of riveted fuselages, fuel tanks, gun turrets and acrylic structures against leakage caused by severe vibration is the war purpose of a new sealing tape. Tape is insoluble in common solvents, such as aromatic aviation fuel, ethyl and butyl acetate, and resists hardening from prolonged exposure to air. (No. 841)

U S I

A new cleaning compound, which comes as a self-emulsifying, non-phenolic liquid, is said to remove grease, oil, smut, and drawing and buffing compounds from metals and painted surfaces. Used as supplied for dipping, spraying, or brushing, or as a water emulsion in washing machines. (No. 842)

U S I

Loosening rust-frozen parts is said to be facilitated by a quick-acting new penetrant oil. The product is also said to dissolve gum, dried grease and oil, and to remove rust and carbon deposits. (No. 843)

U S I

To aid carton re-use, a new "carton colored", opaque ink is offered to obliterate old stencils. It is claimed that the new ink completely covers the old markings and dries almost instantly after application by brush. (No. 844)

U S I

New rust preventive oils are offered in 14 grades. According to the manufacturer, the oils form protective coatings ranging from thin, transparent films to heavy, abrasion-resistant coatings of the water-proof variety. (No. 845)

U S I

To scent floor waxes, furniture oils, window cleaning fluids, insecticides and kindred products, a new, low-cost odorant is offered, with what is described as a powerful, clean, lemon-pine odor. (No. 846)

U S I

U.S.I. INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., NEW YORK 17, N. Y.



BRANCHES IN ALL PRINCIPAL CITIES

ALCOHOLS

Amyl Alcohol
Butanol (Normal Butyl Alcohol)
Fusel Oil—Refined

ETHANOL (Ethyl Alcohol)

Specialty Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof, C.P. 96%, Absolute
*Super Pyro Anti-freeze
*Solox Proprietary Solvent

*ANSOLS

Ansol M

Ansol PK

*Registered Trade Mark

ACETIC ESTERS

Amyl Acetate
Butyl Acetate
Ethyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

*Diethyl Carbonate
Ethyl Chloroacetate
Ethyl Formate

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-aniside
Acetoacet-ortho-chloranilide
Acetoacet-ortho-toluidide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

ETHERS

Ethyl Ether
Ethyl Ether Absolute—A.C.S.

FEED CONCENTRATES

*Curbay B-G
*Curbay Special Liquid
*Vacatane 40

ACETONE

Chemically Pure

RESINS

S&W Ester Gums—all types
S&W Congo Gums—raw, fused & esterified
S&W *Aroplaz—alkyds and allied materials
S&W *Arofen—pure phenolics
S&W *Arochem—modified types
S&W Natural Resins—all standard grades

OTHER PRODUCTS

Cytodion
Ethylene Glycol
Nitrocellulose Solutions
Ethylene Indalone
Urethan

War Check List—Government Regulations

Digest of Federal rules and regulations on price control, allocations and other regulatory measures of cosmetic soap and flavoring industries issued or proposed during the past month

Folding and Set-Up Box Amendment

The War Production Board has amended Limitation Order L-239 applying to all folding and set-up boxes, except paper and milk containers, and liquid tight containers.

Under this amendment a box containing two or more articles is regarded as a set or combination box.

No boxes may be manufactured for the purpose of simultaneously packaging and displaying unless they are made without display features which require additional paperboard.

"No person shall manufacture any set or combination box without permission from the War Production Board in writing. The War Production Board will grant permission to manufacture set or combination boxes only in cases which involve no additional consumption of board over the quantity required to pack the items separately, or in cases where the resultant utility to the consumer is commensurate with the additional use of board involved."

No person shall knowingly manufacture boxes for sale at retail as empty boxes.

"No person shall manufacture any box not covered by specific caliper or weight restrictions in this order unless it is made:

- "(1) Of paperboard no heavier than that reasonably required to transport the product with safety.
- "(2) No larger than is necessary to pack the product.
- "(3) Without extension edges, top or bottom cards, or padded tops, if the construction used requires an extra sheet of paperboard or an extra head."

These restrictions do not apply to boxes completed or in process prior to July 24, 1944.

Inventories are restricted so that

no person shall accept delivery of any quantity of boxes which will increase his inventory of that size and type of box to more than 25 tons, or more than his reasonably anticipated requirements for the next 90 days, whichever is greater. He shall not order boxes which will increase his inventory to more than the amount permitted above.

Communications may be addressed to War Production Board, Paperboard Division, Washington, 25, D. C.

Tallow and Grease Suspension

The War Food Administration has extended through October 31, 1944, the current suspension of inventory limitations on tallow and grease imposed by War Food Order No. 67.

Aluminum Closures Permitted

The War Production Board has amended Order M-1-i to permit the manufacture of closures from aluminum sheet or strip for glass containers. The use of these closures is subject to quota provisions as given in Order L-103-b.

Olive Oil Removed from Import Order

General Imports Order M-63 has been amended so that edible olive oil has been removed from List 3.

Soaps and Cleaners Prices Fixed

Under MPR 391, Amendments 1-3, manufacturers of soaps and cleansers shall not sell these products at prices higher than the maximum prices set forth in section 5 of the regulation. Less than maximum prices are permitted.

Glycol Ethers Exemptions Raised

Order M-336, governing the allocation of glycol ethers has been re-

voked, and control has been transferred to M-300.

Small order exemptions have been raised as follows: Monobutyl ether from 400 to 4,000 pounds, monomethyl ether from 430 to 2,150 pounds, monoethyl ether from 410 to 4,100 pounds, monoethyl ether from diethylene glycol from 460 to 2,300 pounds.

Fibre Shipping Drums

Fibre shipping drums and pails have been placed under simplified control, through having been moved from the control of M-313 to L-337. Substantially the same controls exist, but paper work has been greatly reduced. Inventories are limited to a 60 day supply.

Peppermint Oil Inventories

Inventory limitations have been changed on oil of peppermint by amendment of WFO 81.

This order permits persons who would normally purchase or contract for supplies at this time of the year to acquire 50% of their annual quotas in advance of the beginning date of the allocation year 1944-45.

Urea and Melamine Aldehyde Compounds

Urea and Melamine Aldehyde Moulding Compounds have been placed under General Allocation Order M-300, as Schedule 35. The allocation period is the calendar month, and the small order exemption is 2,000 pounds per month. This quantity may be accepted and used in addition to allocated quantities.

Toluene, Benzene, Xylene

Toluene, Benzene and Xylene have been added to Allocation Order M-300. Purchasers must use Form WPB 2945 in making application by the 10th of the preceding month.

STABILIZERS

"SIZE" IN TEXTILES

"SHORTENING" IN BAKING

"MORDANTS" IN PAINTS

"ANIMAL FIXATIVES"

IN PERFUMES

No Chemist has solved
the mystery of
Life.

Living Organisms
have been imitated
but not duplicated.

The problem of
permanency and
lasting aroma
have been the
study of perfume
laboratories for
ages.

The scent of animals
—the sweetness of
the Rose—these have
been simulated. But
Nature still retains
the secrets of her
own perfection.

Chemists have not
improved on these
natural sources.

PETRA MUSKAT

Sparhawk

SPARKILL, N. Y., U. S. A.

PHOTO from Defender Photo Supply Co.



that creative touch

.....LAST WORD IN "ON THE PACKAGE"
PRINTING SENDS HELENA RUBINSTEIN'S
"HEAVEN SENT" OUT INTO THE WORLD
SELF-ASSURED AND LOVELY IN ITS
PERFECTION.

SILK SCREEN PRINTERS TO THE COSMETIC FIELD

CREATIVE PRINTMAKERS GROUP

14 WEST 17 STREET • CHELSEA 3-6803-4-5

Isopropyl Alcohol

Permanently deodorized and purified

by us

by means of a special chemical process

Blends beautifully

with the most delicate perfumes

INEXPENSIVE

Samples and information on request

Rodex Laboratories

42-60 Crescent Street

Long Island City 1, N. Y.

Irondides 6-9499

In the case of toluene there is a laboratory exemption of not more than 60 gallons within the 12 months' period beginning July 1, 1944.

Higher Aliphatic Alcohols

Higher aliphatic alcohols have been placed under General Allocation Order M-300, as Schedule 33. The allocation period is the calendar month. The small order exemption is as follows:

- 70 pounds of capryl alcohol
- 370 pounds of octanol (2-ethyl hexanol)
- 50 pounds of normal octanol
- 50 pounds of normal decanol
- 360 pounds of lauryl alcohol
- 40 pounds of oleyl alcohol
- 50 pounds of mixed higher aliphatic alcohols

Food Container Restrictions Removed

Order L-103-b has been rewritten to permit the unrestricted use of glass containers for human consumption. Under the new schedule only spaghetti, and macaroni items, candy, nuts, corned beef hash, and sauerkraut are restricted to 100% in their use of glass in a base period.

Cosmetics and toiletries retain their previous quotas, usually 100% of last year, but are permitted unlimited use of aluminum and black-plate rejects for closures.

Anticipated Alcohol Use

The War Production Board has announced that it will permit manufacturers of cosmetics to anticipate during the third quarter up to 50% of their fourth quarter quota for alcohol under Allocation Order M-30.

This action is taken to permit manufacturers to utilize the seasonal labor available during the summer months. Those wishing to take advantage of this order should file WPB-2945 forms.

Coconut Oil Ceiling Differentials

Amendment 29 to Maximum Price Regulation 53 fixes differentials on coconut oil in drum sales. OPA has fixed the following differentials, in cents per pound, when the coconut oil is shipped in returnable drums: car lots, 0.5c; carlots in more than one delivery of ten drums each, 0.7c; 5 to 9 drums, one de-

livery, 1.1c; and 1 to 4 drums, one delivery, 1.5c. When the shipment is made in non-returnable drums, 0.5c per pound is added to the ceilings for the shipments in returnable drums. The bulk ceilings per pound for coconut oil c.i.f. U. S. ports are: Manila crude, 8c Pacific Coast and 8.35c New York; Ceylon crude, 8.50c Pacific Coast and 8.85c New York; Cochin type, 9c Pacific Coast, 9.35c New York.

Tung Oil Allocation

The War Food Administration is beginning the allocation of tung oil, starting this month.

Consumers desiring a portion of the limited quantity of the oil for "non-specified" uses should file application on form FDA-478.

Applications must be in hand by the 15th of the month prior to the allocation period.

Cellophane Limitation

According to WPB Order L-20 cellophane may not be used in the packaging of cosmetics, soaps, deodorants, and cleaning materials. It may be used to replace metal as a container for dentifrices, and liquid or paste soap. Its use is excluded to condiments and spices.

Second-Hand Shipping Containers

Maximum Price Regulation 529 has been amended (Amdt.2) in the following respects:

The following prices apply only to sales and deliveries of second-hand paper-board shipping containers, defined in section 1.

Description	Maximum price per cwt.
Repairable	\$1.75
Reusable-unsorted	2.25
Reusable or reconditioned—sorted by original user's name—applicable to sales by dealers or emptiers or original users only	3.50*
Reusable or reconditioned—sorted by size—applicable to sales by dealers only ..	3.75*
Reusable or reconditioned—sorted by size and brand name—applicable to sales by dealers or emptiers to original users only	4.00*

Reusable or reconditioned—
all other sales..... 2.25

* If the delivery price per cwt. translated into a price per container shall be less than 5c, then the maximum delivery price for each container shall be 5c. If sales of these containers are made f.o.b. seller's premises the maximum price shall be 4³/₄c. per container. When sales are made in accordance with the provisions of this foot-note no additional charge may be made for sales of containers in lots of less than 100.

Tropical Chocolate Bars

About 107,000,000 bars of tropical chocolate will be purchased during the third quarter of 1944 by the Jersey City Quartermaster Depot for resale overseas in tropical climates. An additional 91,000,000 bars will be purchased by the Chicago Quartermaster Depot to be included in ration packs for distribution in these areas. Developed by the Quartermaster Corps in conjunction with prominent chocolate manufacturers, tropical chocolate has proven satisfactory in laboratory tests up to 120 degrees Fahrenheit. The melting point of regular chocolate is 85 degrees Fahrenheit, at which point character and texture suffer a noticeable change; 90 degrees Fahrenheit causes the chocolate to become liquid.

Chocolate, sugar, skim milk powder, cocoa fat, oat flour, artificial flavoring and vitamin B make up the tropical chocolate formula which cannot be poured, but is pressed into molds. Block-shaped, the bars save considerable shipping space which would otherwise be needed for the familiar flat-type. The tropical chocolate bar is essentially the same in taste, palatability and texture as regular chocolate.

The combined requirements of the Jersey City and Chicago depots represent 25,000,000 pounds of chocolate which the industry has allocated to Army needs. Because of the extensive needs of our overseas troops, tropical chocolate has not been released for commercial sale, but as with other wartime developments of the Quartermaster Corps, it will undoubtedly appear in peacetime throughout our Southern states and in the North during summer months.

B-W LANOLIN U.S.P.

EVENTUALLY—For better creams, with economy

B-W Lanolin the superior quality puts into your cream that which gives the skin that smooth soft velvety feeling.

B-W Lanolin will never cause your cream to darken, is best by test and contains over 15% free and combined Cholesterol.

No other base used in your cream, equals the merits of B-W Lanolin.

B-W HYDROPHIL (Absorption Base) Made in U.S.A.

BOPF-WHITTAM CORPORATION

Executive Office
Laboratory and Factory

LINDEN, N. J.

America's Original Lanolin Producer
ESTABLISHED 1914

Sales Office
509 Fifth Ave.

NEW YORK, N. Y.

ESSENTIAL OILS  AROMATIC CHEMICALS

P.R. DREYER INC.

119 WEST 19TH STREET
NEW YORK, N.Y.

OIL ALMONDS

SWEET EXPRESSED

U.S.P.

This Oil of the highest quality is now available in quantities ranging from 1 lb. bottles to 400 lb. drums. Write for our interesting quotations on the quantities you require.

FLOWER OILS • PERFUME SPECIALTIES

Many years ago we first offered fine paper boxes to cosmetic manufacturers. It is significant that since then most of the concerns with whom we began business still call upon us to meet their needs.

Despite the shortage of raw materials it is our pledge never to depart from the high standard of quality that has always been identified with KARL VOSS paper boxes.

There is no finer cosmetic container than a KARL VOSS box.

KARL VOSS CORPORATION

DIVISION OF SHOUF OWENS INC.

HOBOKEN

NEW JERSEY

NEWS and EVENTS

Death of David H. McConnell, Jr.

David Hall McConnell, president of Allied Products, Inc., New York, N. Y., died at his summer home in East Hampton, L. I. on August 6, after a brief illness. He was 42 years of age.

He succeeded his father, David Hall McConnell, as head of the firm in 1936. Allied Products was founded by the latter in 1886.

He was also president of Avon Products, Inc., and Hinze Ambrosia, Inc., and was a director of the Toilet Goods Association.

Mr. McConnell was a graduate of Phillips Exeter and Princeton.



D. H. McConnell, Jr.

More alcohol in 1945

Dr. Walter Whitman, assistant director of WPB, addressing the Industrial Alcohol Producers Industry Advisory Committee, July 20, indicated that the industry's production of alcohol will exceed the demand in 1945.

Dr. Whitman stated that at the present time it is estimated that 604,000,000 gallons of 190 proof alcohol will be needed in 1945, against an estimated potential supply of 639,800,000 gallons.

Revised estimates for 1944 call for a consumption of 614,300,000 gallons, against an estimated supply of 586,200,000. Requirements in 1942 were 229,000,000 gallons.

Two vital factors influencing the situation are the rubber program and the production of high-test aviation gasoline.

Dr. Whitman did not make public what the inventories of alcohol might be at the end of this year.

Dorothy Gray in baby field

The many new arrivals of babies, incident to war times, has led Dorothy Gray, Ltd., division of Lehn &

Fink Products Corp., New York, N. Y., to enter the baby field with four new products: baby powder, oil, anti-chafing ointment and softening skin cream. The new line was tested on the market in 25 cities late in the Spring with results that promise success for the new products.

American Home Plans

American Home Products Corp. has formed two new companies to handle all its export business from the United States. One company, Wyeth International, Ltd., will export pharmaceuticals, biologicals, vitamins, etc. The other company, Home Products International, Ltd., will handle export sales of food, household, cosmetic and packaged drug products.

Redanz feted by Fritzsche Brothers

Fifty years' association with one company is a proud record of which very few can boast. Three of the executives of Fritzsche Brothers, Inc., New York, N. Y., have now reached this goal. William A. Welcke, vice-president and treasurer, was the first (1935); the second was Frederick H. Leonhardt, president (April 1944); and on July 15th, Ralph R. Redanz became the third to attain this coveted goal. George L. Ringel is approaching the milestone.

Mr. Redanz joined Fritzsche Brothers in 1894 when the company occupied modest quarters on Barclay Street. At that time their office, sales and factory force totaled little more than thirty employees. In the fifty years that followed he saw the force grow by nearly ten times.

In honor of the occasion his anniversary was celebrated on July 14th with a banquet at Waldorf-Astoria. He was feted by officers and directors of Fritzsche Brothers, and by members of the Quarter Century Club.

E. Fougera begins lipstick campaign

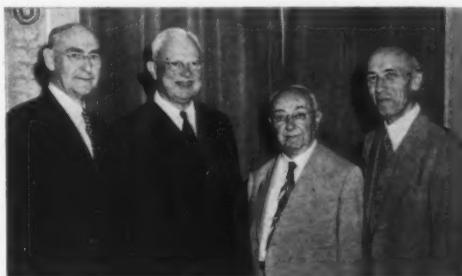
The biggest sales promotion campaign in its history was launched early in July by E. Fougera & Co., New York, N. Y., to promote the sale of Don Juan lipsticks. Over 100 newspapers and 22 magazines are being used to create popularity for the lipstick.

Shulton launches largest campaign

Shulton, Inc., New York, N. Y., has just launched the largest Fall advertising campaign in the history of the company. The entire line of its merchandise rather than specific combination packages of toiletries and perfumes is being emphasized in the promotion.

Superior Products Complaint

Superior Products Company, Dallas, Texas, has been charged in a complaint issued by the Federal Trade Commission with false advertising and misrepresentation. The complaint alleges that the product Trio 3 Purpose Cream does not nour-



George L. Ringel, Frederick H. Leonhardt, William A. Welcke and Ralph R. Redanz

ish the tissue of the skin, and that the respondent's bleach cream contains ammoniated mercury, which may be dangerous to users.

Complaint against Ovelmo Co.

Ovelmo Co., Ft. Wayne, Ind., has been named as respondent in a complaint issued by the Federal Trade Commission charging false advertising.

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Essential Oils

for

Perfumery •

Cosmetics •

Soap •

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CHEMOSOL

Let our laboratory prove it in your
product—or ask for a testing sample.

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CORP

48th Ave. & 5th St., Long Island City 1, N.Y.



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MODERN

DURABLE

UNIFORM

COLORFUL

Manufacturers of
COLLAPSIBLE
TUBES since
1898

TURNER WHITE METAL CO., Inc. . . . New Brunswick, N. J.

Cosmetic Credit Men's Outing

Laying aside the cares of the world for the day members of the Drug, Cosmetic & Chemical Credit Men's Association gathered at the Soundview Golf Club, Great Neck, L. I., recently for their annual summer outing. Following luncheon at the club, a golf tournament was held by most of the men. Those who did not play golf either enjoyed a movie entertainment with the women or adjourned to the home of Nat Otte in Great Neck Estates where informal entertainment was enjoyed until 5.30 p. m. when the golfers and others gathered for a cocktail party. The low gross score was turned in by Andrew Fredericks.

This was followed by dinner at the Soundview Golf Club. E. Kavanagh, chairman, acted as toastmaster and speeches mostly in a humorous vein were made by E. F. Maloney, Fred Kaiser, J. C. Lynch, J. Holgan, Louis Candee, W. E. Foster and Edward Farrell, former chairman. A letter from Mrs. Nat Otte, who was in Louisville, Ky., regretting her inability to be present was read.

The party then adjourned to the home of Mr. Otte where an informal good time was enjoyed by everyone until a late hour. Talented members of the association such as Ellis Barkerding and W. E. Foster and Mrs. Fred Kaiser rendered popular and

familiar songs on the piano in which all joined.

The complete success of the affair was due largely to the work of Edward Maloney, E. Kavanagh, Nat Otte and William Otte.

The next meeting of the group will be held Thursday, Sept. 21 at which time the nominating committee will present the names of candidates for the coming year.

Associated Distributors Expand

The first step in the expansion promised by Louis J. Ruskin when he recently purchased Associated Distributors, Inc., was announced recently. Associated Distributors, which Mr. Ruskin purchased last month for \$2,000,000, has leased a five-story and basement building at the corner of Illinois and Clair Streets, in Chicago, Ill. The building contains 60,000 square feet.

Associated Distributors, who manufacture and distribute Chen Yu cosmetics, Tabu and Dana perfumes, 5-Day pads, and other cosmetics, will occupy the entire building. The present four buildings will be used for manufacturing and warehousing.

Sterling Declares Dividend

The Board of Directors of Sterling Drug, Inc., Wheeling, W. Va., declared a dividend of 75 cents per share, payable September 1.

Maxandre Parfums in class field

Maxandre Parfums Co., 118 E. 28th St., New York, N. Y., is marketing its new line of Maju perfumes in half ounce bottles at \$9 and in one ounce bottles at \$16. The vials with patented inside screw stoppers decorated with sea shell flowers are made by Glass Industries, Inc. As shown in the Packaging Portfolio in this issue the vials are put into miniature baskets on a dainty pillow and tied with ribbon. The idea for marketing the perfume in this way was worked out by Mrs. Dorothy Justes and her husband. The latter is now in the armed services in Algiers as an officer in the French Army, under General DeGaulle.

BIMS scores again!

In attending one of the BIMS tournaments one never knows what is in store for him. One of the happiest and probably long-to-be-remembered affairs was held at Winged Foot Golf Club, Westchester, on Tuesday, July 25.

Harry Welch, guest of Charlie Darr (Harriet Hubbard Ayer), is the original "Pop Eye" of stage and radio, and was persuaded after dinner to give one of his performances. He kept everyone on the front edges of their chairs for an hour with his imitations of stars of the stage and screen, winding up with the only



1. E. W. Farrell, ex-chairman, makes a lusty drive. 2. L. P. Wehrley, G. Wohlfort, Joseph C. Lynch, J. A. Koch and E. P. Utter relax before dinner. 3. Mr. and Mrs. R. Holliday pause during a dance. 4. Joseph C. Lynch and Louis Candee before starting a discussion on politics. 5. Chairman E. Kavanagh, extreme right, proved to be an excellent toastmaster. 6. Three Eds: E. J. Holgan, W. E. Foster and E. Kavanagh sing the melodies played by Mr. Foster. 7. A. Weyand, Miss Mona Kaiser, L. D. Cruttenden and Edward Maloney at the informal dance.

PERFUMERS

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PERFUME

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... for uniform PURITY in all grades and colors. Constant laboratory and research control provides resistance to oxidation, heat, light,—odor-free and tasteless qualities that meet or exceed U.S.P. requirements.

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Makers White Oils (U. S. P. and Technical), Petrolatums (all grades and colors), INSECTICIDE SOL (deodorized insecticide base), Deodorized and other Naphthas, Petroleum Sulphonates, Waxes, Industrial and Motor Lubricants and Greases, Fuel Oils, and other petroleum products.

JUST OUT!

BULLETIN_{on} REPLACEMENTS

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(No. 12)

Special 44-page Reference Bulletin, Prepared by M. G. deNavarre, Ph.C., B.S., Technical Editor of the AMERICAN PERFUMER.

An invaluable reference work, authoritative and comprehensive . . . on the present availability of materials, replacements . . . and 162 convenient sources of supply. All listings of products cross-indexed by number with manufacturers.

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AND ESSENTIAL OIL REVIEW
9 East 38th St., New York 16, N. Y.

6-act version of "Carmen" ever staged, in which he was all of the performers as well as the orchestra and conductor, and even imitated some of the expiring bulls. His version of a plane arriving at Honolulu from Frisco, and his imitation of Allied planes landing in Japan were so realistic that it brought the entire crowd to their feet.

Mr. Welch has just been commissioned to make a tour of all hospitals throughout this country and all war areas. He will be gone for some time and the members of BIMS were indeed lucky to get this fine look at him before he went away.

About one hundred members played golf, and over \$200 cost price of bonds were awarded to the following:

John V. Cavaleiro, R. Rooks, Robert A. Kramer, C. Ferguson, Ray F. Ougheltree, Frank A. Nicholson, James A. Leyden, C. E. Hemingway, G. W. Sands, R. J. Anderson, Alec J. Dedrick, Harris Whitaker, Paul Miller, Russell Boland, K. L. Patterson, Milton Small, Pierre Harang, John E. Gabrielsen, William F. Zimmerman, David J. Stewart, Jr., Sewell H. Corkran, William H. Green, Charles Mooney, Dudley Shaw, Henry F. Hermann, Edward A. Bush.

Drug-Chemical Officers Re-elected

At the annual meeting of the Drug Chemical and Allied Trades Association of St. Louis, Mo., the following officers were re-elected for the current term: President, Paul L. Mueller, Missouri Box & Label Co.; first vice-president, Fred C. White, Obeir Nester Glass Co.; second vice-president, Edward H. Baltzer, McKesson & Robbins, Inc.; secretary-treasurer, Robert Rosenthal, Superior Folding Box Co.

T.G.A. Cancels Scientific Section

Because of transportation difficulties, and at the request of the Office of Defense Transportation, the Executive Board of the Toilet Goods Association has cancelled the Winter Meeting of the Scientific Section.

Kopal demonstrated to salesladies

To familiarize the sales staff of the toilet goods department of Saks-Fifth Ave., one of the foremost department stores of the country, with

the new product Kopal, the cosmetic for the teeth offered by Technical Laboratories, Inc., a demonstration was held last month at the Louis XVI suite of the Hotel St. Regis, New York, N. Y. Following a lecture by A. E. Mullen and a demonstration refreshments were served.

Greater New York Fund

Business firms in the drug and cosmetic field, and their employees, have contributed a total of \$48,145 to the Greater New York Fund, it was announced by William J. Murray, president of McKesson & Robbins, Inc.

Shulton Appoints Director

Shulton, Inc., New York, N. Y., has announced the appointment of Ruth Ann Bolway as Assistant Publicity Director.

New tube-packed hair shampoo

Raymond Laboratories, Inc., Minneapolis, Minn., have launched Rayve which is said to be the first hair shampoo ever packaged in a tube. The utility and convenience of the tube for packing a shampoo and its economy in that form are being emphasized.

Bristol-Myers Dividend

Directors of Bristol-Myers Co. have declared an interim dividend of 50 cents a share on capital stock payable September 1 to stockholders on record August 14.

Shulton Awards Prizes

Shulton, Inc., New York, N. Y., has announced the winners of the Sixth Annual Father's Day Window Display Contest for Early American Old Spice Toiletries for Men. Stores, as is the usual practice, were divided into two classifications—drug stores and department stores.

Parkway Drug Co., of Chicago, Ill., won the \$400 prize in the first classification, and L. S. Donaldson Co. of Minneapolis, Minn., the latter.

Ruthrauff & Ryan Appointed

Kerkoff, Lt., makers of Djer-Kiss, and V. Vivaudou, makers of Mavis, have appointed Ruthrauff & Ryan as their advertising agency, effective immediately. Both companies are subsidiaries of Universal Laboratories.

Procter & Gamble Booklet

By way of commemorating a milestone Procter & Gamble Co., of Cincinnati, Ohio, have printed the booklet "Into a Second Century."

It traces the history of the company from the time it was founded by William Procter and James Gamble in the fall of 1837, on an invested capital of \$7,000, to the giant that it has become today, doing an annual business in excess of \$300,000,000, on an invested capital of \$155,000,000.

The company's beginning was humble, and the partners were their own salesmen, peddling soap and candles about the streets of Cincinnati. One of the precepts upon which the company has flourished has been the dictum of old James Gamble: "When you cannot make pure goods and full weight, go to something else that is honest, even if it is breaking stone."

It is interesting to note that in 1890 the price of a medium sized bar of Ivory soap was 4.75 cents. In the years since that time, the price of raw materials has risen 33 per cent, wages have gone up 1000 per cent, new taxes have added over half a cent to the cost of each bar, yet this same bar costs approximately six cents in the average store, and is of better quality than it was 54 years ago.

Mrs. Ernest Wertheimer Dies

Mrs. Ernest Wertheimer, mother of Paul and Pierre Wertheimer of Parfumerie Bourjois, Inc., New York, N. Y., and its allied companies, died August 7 at her home in New York City at the age of 85.

Mrs. Wertheimer fled from Paris three times in 70 years to escape invading German armies. She left in 1870 during the Franco-Prussian war, again in 1914 when the German armies approached the Marne and again in 1940 when Nazi motorized columns roared into the city. She is survived by her two sons, three grandchildren and two great grandchildren.

Postwar plant site

As a step in plans to construct ten new plants after the war, in selected areas throughout the country, Canada Dry has bought a plant site in Orange, N. J. On the site a new building is to be erected.



**A New Medium for Fixing,
Blending and Stabilizing Perfume**

HIBISCONE is of equal interest to the perfumer, the cosmetic technician, and the toilet soapmaker, to all of whom the completeness, stability, and the lasting property of perfume is of prime importance. Its breadth of applicability and other advantages place it in a class by itself.

HIBISCONE, although belonging to the Musk family, is not a Nitro Musk. Its odor recalls that of natural Musk and Ambrette Seed. Its addition to existing formulas permits of a reduction in the percentage of Musk now used. In new formulations, Musk can be dispensed with entirely by using Hibiscone in conjunction with either natural or synthetic Civet.

HIBISCONE may either be added to finished perfume and toilet water or incorporated in the perfume oil.

HIBISCONE is very stable to alkalis and acids. This makes it applicable to perfume for alkaline as well as acid cosmetics. It does not cause discoloration.

HIBISCONE blends in speedily with the oils in which it is incorporated, results being manifest in about a week or ten days.

HIBISCONE will be found very effective for deodorizing alcohol, and particularly for modifying the odor of isopropyl alcohol.

HIBISCONE S is a valuable, yet inexpensive, medium for stabilizing perfume in toilet soap, without discoloration. It will also neutralize the basically fatty odor of soap stock, thus permitting of a reduction in the percentage of perfume oil ordinarily used.

HIBISCONE S can also be used to advantage in sachet, dusting powder, bubble bath, shampoo, liquid soap, lipstick, etc.

HIBISCONE and HIBISCONE S are reasonably priced and can therefore be used even in low-priced products.

Samples of Hibiscone and Hibiscone S, together with suggestions for using these products, will gladly be sent upon request.

VAN DYK & COMPANY
INCORPORATED 1904

MANUFACTURER OF PERFUMERY & COSMETIC RAW MATERIAL SINCE 1901.
OFFICES, FACTORY, LABS: MAIN & WILLIAM STS., BELLEVILLE 9, N. J.
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Lanone

LOOKS — BEHAVES — FEELS

Like Lanolin

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**HAS GREATER EMULSIFYING PROPERTIES
PRACTICALLY ODORLESS**

Lanone is being successfully used in lipstick, shaving creams, hand creams, emollient creams and other cosmetics.

*Write for Literature and Samples
Price 35¢ lb. in drums
quantity price lower*

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CHEMICAL COMPANY**

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Stick to Your Colors

*Your colors are part
of your Sales Appeal*

We offer you our SPRAYING—ENAMELING—and BAKING services for work on

**Compacts
Lipsticks**

**Closures of all types
Colors fused in on Bottles
and Jars of all sizes**

And any other items you may require

We also do:

**Unremovable Lettering on
any of the above items**

All our work is Alcohol Proof

Jesselson Sales Associates
347 Fifth Ave., New York 16, N. Y.

Alexander Moodie Dies

Alexander Moodie, one of the better known salesmen in the toilet preparations field who died recently at the age of 61 years was engaged in war work in Newark, N. J., at the time of his death. He was formerly sales manager for Mary Dunhill, New York, N. Y. and years ago served the old Marinello Co. He is survived by his widow and son.

Verley's "Pastel" Performed

The first New York performance of Albert Verley's "Pastel Sonore" was performed at the Lewisohn Stadium, New York, N. Y., on the evening of July 5 by the Philharmonic-Symphony Orchestra under the direction of Vladimir Goldschmann. The audience was large and highly appreciative of the composition. The first performance was given by the



Albert Verley

St. Louis Symphony Orchestra in 1935. Mr. Verley is well known throughout the essential oil, aromatic chemical and perfumery industries with which he has been associated both abroad and in the United States for many years. Over the years he has always been interested in music both as a musician and as a composer; and his numerous compositions have given delight to thousands who have had the privilege of hearing them.

Dunhill to Offer Line for Men

The organization of Alfred Dunhill Men's Toiletries Ltd., New York, N. Y., is under way by the Dunhill International Corp. for the purpose of making and distributing a new line of toiletries for men. The new line is to be launched it is reported shortly after European hostilities cease.

Plough Buys Radio Station

Plough Inc., Memphis, Tenn., has purchased, subject to the approval of the FCC the radio broadcasting station WMPs, Memphis.

Dr. Fourman on Vacation

Dr. Victor Fourman, of the Syntomatic Corp., 114 East 32 St., New York, N. Y., has just returned from an extensive trip. Together with his wife he visited his children at camp in the northern part of Vermont, and then returned to New York by way of Provincetown, Mass.

Aluminum Output Cut

Production of metal aluminum by three plants owned by the Defense Plant Corp. and operated by the Aluminum Co. of America has been ordered. The plants are located in Riverbank, Cal. and in Burlington, N. J. The total cutback means the shutting down of four potlines having a total monthly capacity of 12,000,000 pounds.

U. S. Detergent Incorporates

U. S. Detergent Co. New York, N. Y., has been incorporated with a capital of \$5,000 in \$10 shares. Subscribers are Jay Rose, Frederick Le Pan and Marian V. Fegley.

PLYMOUTH CRYSTAL "E" WHITE OIL

This oil has been the standard for many of America's very oldest cream manufacturers since their origin. It is water-white and crystal-pure . . . odorless and tasteless . . . of U. S. P. Acid Test and free of fluorescence . . . especially refined for the cosmetic industry and as pure as a mineral oil can be made. Because of its extra lightness you should specify it for the soft, light, fluffy creams demanded today.

Other mineral oils of heavier body if desired.

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& Essential Oil Review



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Both soft, low melting point consistencies and pharmaceutical grades . . . as well as the regular grades for the drug and cosmetic industry. All grades are offered from Snow White to Amber.

August, 1944 87



POWCO BRAND NEUTRAL SOAP


Our modern production methods and close selling margin make it possible for you to buy standardized, air floated POWCO BRAND Neutral Soap of better quality—at a saving.

POWCO BRAND soap is laboratory controlled to maintain rigid uniformity of physical and chemical properties so that, once you adopt POWCO BRAND soap, your base does not vary. That's why chemists like it.

We urge you to consider carefully POWCO BRAND—for better quality at a saving.

POWDERED NEUTRAL SOAP





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Chemically tested for quality and
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own method.

BEEHIVE BRAND
Beeswax

And because of its superior quality
you can use less and still get a
finer finished product! Guaranteed
pure...guaranteed always the same.

Will & Baumer Candle Co., Inc.
Established 1855
SYRACUSE, NEW YORK

Spermaceti Ceresine Yellow Beeswax
Composition Waxes Red Oil Hydrotreated
Stearic Acid

Curry on Pacific Coast

John H. Curry, vice president and general manager of Ogilvie Sisters Sales Corp. New York, N. Y., is spending six weeks in California conferring with representatives of the company on the coast.

Pushing Pow Wow Cleanser

The West Coast Soap Co., Oakland, Calif., has launched a special sales campaign to develop its Pow Wow cleanser.

Parfums L'Orle Promotes Deodorant

Parfums L'Orle, Inc., New York, N. Y., for the first time is using national advertising to promote the sale of Lor-Odo a new type deodorant which it is stated was developed after four years of research and tested in a few markets last year.

United Drug Profits

United Drug, Inc., reports a net profit of \$492,405 for the first three months of 1944. This profit is equal to 35 cents per share on the 1,400,560 outstanding shares of common stock.

Trade Jottings

National Adhesives new laboratories occupy the entire 10th floor of the modern steel and concrete building on the northwest corner of 39th Street, New York, N. Y. General and sales offices are located on the 9th floor of the same building.

Lynette Perfumes, Inc., New York, N. Y. has appointed Malcolm C. Currie and Associates of Los Angeles, Calif., as their Pacific Coast sales representatives. The perfumes represented are Spellbound, Fantasia and Blue Sapphire.

Forty-three firms closely related to the drug and chemical industry have been added to the membership of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, according to Guy L. Marsters, vice-president of the Norwich Pharmacal Company and chairman of the membership committee. The report of his committee was presented at a luncheon meeting

of the executive committee of the Section at the Drug & Chemical Club on Thursday, July 27.

Mr. Marsters pointed out that the additional membership brought the total close to the five hundred mark, an all time record. E. T. T. Williams of Becton Dickinson, chairman of the section, presided.

Book Review

The Standardization of Volumetric Solutions. Second Edition. Completely Revised and Enlarged. By R. B. Bradstreet. Illustrated and Indexed. Chemical Publishing Co., Inc., Brooklyn, N. Y. \$3.75.

This book is not for the beginner, since it presupposes a general knowledge and practice of analytical chemistry. It is a handy reference work for the man who must hurry to get results. The discussions of the methods and their good and bad points are short and very useful, and the text is replete with helpful hints, equations, tables of important data, expressions for calculating normalities, etc.

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ABSORPTION BASES

for PHARMACEUTICAL and
COSMETIC preparations

Our Absorption Bases possess inherent emollient and absorption properties because of their high free Cholesterol content.

- Facilitate the penetration and absorption of incorporated therapeutic agents.
- Recommended for ease of emulsification.
- Absorb unusually large amounts of water.
- Form pure white water-in-oil emulsions, completely stable under widely varied conditions.
- Form elegant products of rich texture and consistency.

We also manufacture—

Cholesterol C. P., Emulsifiers, Ointment Bases, Industrial Penetrants, Softening and Dispersing Agents, and other Amerchol Products.

AMERCHOL products are manufactured from specially processed Cholesterol and other sterols.

- Will not oxidize, nor turn rancid.
- Are unaffected by electrolytes.
- Retain their properties at extreme temperatures.
- Are for neutral, acid and alkaline creams, ointments and lotions.

American Cholesterol Products

Incorporated

MILLTOWN, NEW JERSEY

Sales Office—58 W. 40th St., New York 18, N. Y.

BOTTLES

Glass Stoppered Perfume
and Toilet Water Bottles

Attractive Designs

LEART COMPANY

61 W. 23RD ST.

NEW YORK 10, N. Y.



CONSOLIDATED

Established 1858 **FRUIT JAR CO.**
NEW BRUNSWICK, NEW JERSEY

SHEET METAL GOODS : CORK TOPS : SPRINKLER TOPS : DOSE CAPS

REPLACEMENTS

For
AROMATIC CHEMICALS
ESSENTIAL SPICE
and
FLOWER OILS



•
SOAP PERFUMES
ODOR MASKS

SEELEY & CO.

136 LIBERTY STREET NEW YORK 6, N. Y.

FACTORIES

FARMINGDALE, L. I., N. Y.

NYACK, N. Y.

Post War COSMETICS

While we cannot accept any more orders now we will be glad to confer with you on your post war requirements.

Trece Laboratories

819 Broadway

New York 3, N. Y.

THE VERB FINDER

A NEW INVENTION IN WORD FINDING

Entirely different from any synonym book or thesaurus. It is an alphabetical arrangement of nouns, under each of which are listed up to 100 choice verbs, used by famous writers.

The VERB-FINDER selects a dynamic verb for each noun and makes your sentences bite.
530 pages . . . \$3.00 postpaid.

ROBBINS PUBLICATIONS
BOOK SERVICE, 9 East 38th Street, New York

(Continued from page 44)
ethyl alcohol and terpineol were of doubtful value.

Phenyl ethyl alcohol proved of no value in the stabilization of cyclamen aldehyde. This was one of the most difficult aldehydes to stabilize with an alcohol, but geraniol and terpineol, in large quantities, were somewhat inhibitory to oxidation.

SUMMARY

A summary of the stabilization effects of alcohols on aldehydes shows that the inhibitory property of the alcohol on oxidation is not necessarily associated with hemi-acetal formation, but rather with undefined properties of the alcohols themselves.

The problem of the stability of the individual aldehyde is not only affected by the nature of the aldehyde, and of the other alcohols and aldehydes with which it is to come in contact, but must be studied in relation to the particular use to which the perfume material is to be put. A material stable in an alcoholic perfume solution may prove much less so in soap, or the opposite may be true.

Often, the end use of the aldehyde dictates the mode of stabilization, since stabilization against air oxidation during storage offers no assurance of stability under all conditions.

The stabilization of soap against oxidation while the soap is ageing, and particularly the analysis of the effectiveness of such stabilization by discoloration, has been the subject of exhaustive studies, an important contribution having been made by the Givaudan laboratories.^{10,11} Just what effect stabilization of aldehydes will have (if any) on the delicate tones produced by the ageing of perfumes is an interesting question, which to our knowledge has not been studied.

The perfumers who have at their disposal a wealth of chemical information on this subject can utilize their knowledge in the creation of perfume compositions extremely stable under conditions of actual use. For in the study of this subject, the perfumer is able to avoid unpleasant and unstable combinations, no matter how appealing to the nose they may be at the time of formation, and he is able to choose his ingredients

to give a fragrance unlikely to undergo drastic changes over a reasonable period of time.

BIBLIOGRAPHY

10. The Givaudan, June 1941, Judging Soap Antioxidants by Discoloration.
11. A. T. Fiore, Soap, Vol. 17, Dec. 1942, page 30.

(Note: Excellent bibliographies of the subject appear in *Drug and Cosmetic Industry*, April, 1933, page 338 and in the same journal, June, 1933, page 540. A bibliography containing 1,630 references on the subject of chemical retardation appears in Bailey's book.)
(This is the second of two articles)

Naval Stores Advisors

Fourteen representative producers, processors, and dealers in gum naval stores have been appointed to an advisory committee, according to a release from the Office of Price Administration.

This committee, together with the OPA, will meet at a later date to discuss price regulation.

Brazil's Cosmetic Industry

The manufacture of cosmetics and perfumes in Brazil has now reached a point where the nation is considered to be 90% self sufficient.

BRIDGEPORT...

For the past two years our facilities have been devoted almost exclusively to the production of war materials. We have been fortunate, in that we have been able to handle this work on the same equipment used for our regular peace time products, and, consequently, when material again becomes available for lipstick containers, vanity cases and other metal cosmetic items we will be prepared to start producing our regular line immediately. If you too are planning your post war program, we will be glad to assist you.

THE BRIDGEPORT METAL GOODS MFG. CO.

BRIDGEPORT

Established 1909
PHONE BRIDGEPORT 1-3118

CONNECTICUT

VANITY CASES • ROUGE CASES • PASTE ROUGE CONTAINERS • LIPSTICK HOLDERS (ALL TYPES) • POWDER BOX COVERS • EYEBROW PENCIL HOLDERS • BOTTLE CAPS • JAR CAPS • METAL NOVELTIES TO ORDER

Richard M. Krause inc. 50 East 19th. St. New York 3, N.Y.
ALGONQUIN 4-6760

BOX WRAPS·LABELS

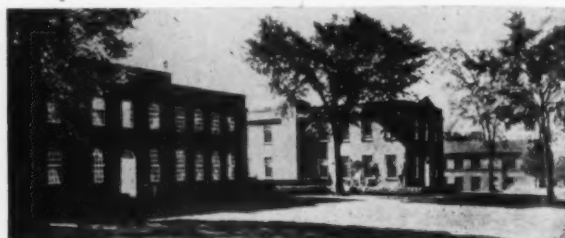
ORIGINAL DESIGNS ENGRAVED, PRINTED, DIE-STAMPED, EMBOSSED
Specializing in distinctive color printing for the toilet goods industry



Take This Tip:

**you can't go wrong, if you
order your raw materials
from "Drury in Chicago"**

A.C. DRURY & CO., Inc., CHICAGO, ILL.



Laboratory Bldgs., R. T. Vanderbilt Co., E. Norwalk, Conn.

VEEGUM

Magnesium Aluminum Silicate Gel

for

Leg Make-up
Anti-Perspirants
Hand Creams
Tooth Pastes
Emulsions
Brushless Shaving Creams
Lather Shaving Creams

Protects Flavors . . . Protects Perfumes
Stabilizes Emulsions

Samples upon Request

Specialties Department

R. T. VANDERBILT CO., INC.

230 Park Avenue

New York 17, N. Y.

STABILIZED

Cold Wave
SOLUTION

FINISHED AND READY TO USE
7½% THIOGLYCOLLATE
CONSTANT pH OF 9 PLUS

Will not turn pink when exposed to air
. . . shipped in gallons and barrels.
UNLIMITED PRODUCTION

VACUUM DISTILLATION COMPANY
617 N. Kingshighway St. Louis 8, Mo.

A NEW WHITE SACHET FILLER

Made in fine ground wood powder—NEUTRAL COLOR.

Also fine ground aromatic red cedar powder.

Highly absorbent, retains scent.

Above grades are now being used in the cosmetic industry.

Always uniform—prompt shipment—no priorities needed.

Sawdust for other purposes—special fine and coarse grades.

Ask for samples

Cosmetic Materials Division

NATIONAL SAWDUST CO. INC.

76 North 6th Street

Brooklyn 11, N. Y.



Recent Price Developments In Essential Items

MARKETS generally became nervous over the past month in the face of the threatened early collapse of Germany and the growing feeling of a sudden ending of the conflict. Several essential oils fluctuated more rapidly, and there were indications that price developments in some of the miscellaneous items would grow more interesting as the month closed.

In some of the industrial chemicals where consumption runs into a substantial tonnage, there was increasing fear of surpluses and their effect upon prices which are in most instances at depression low levels. Loss in export trade which has been attributed to unnecessary details under government regulations may have the much feared effect upon domestic values in the post-war period since major producers will encounter much difficulty in disposing of sudden surpluses as war contracts are cancelled. On the other hand, there remains a strong possibility of increased demands from liberated nations especially since major chemical plants on the Continent have been among the major targets of the United Nations.

Glycerine is among the many items which bears close watching. At the moment there is sufficient material to meet all available requirements. Major producers are anticipating a decided increase in exports as soon as the war ends, however, and this threatens to bring about a complete

change in the domestic picture. Great Britain and the United States are about the only two countries with glycerine stocks, it is pointed out, and according to reports Great Britain is not too well supplied with goods.

ITALIAN LEMON OIL

No further progress has been made regarding additional imports of Italian lemon oil. The Army is understood to own oil at Italian ports, but no additional lots outside of the 100,000 pounds that arrived here about a month ago has been put aboard returning transports. The acute shortage of lemon oil on spot for civilian use would assure a warm welcome for any future arrivals that would arrive free from distribution control by government agencies. Liberation of the Italian port of Leghorn by United Nations was received with considerable interest in local trade circles since prior to the war a great many commodities imported here, including orris root, came from that port.

Some local houses which have been endeavoring to obtain replacements of oils and botanicals in North Africa for more than a year point out that a resumption of trade rests largely on the matter of foreign exchange. Until this question is solved there does not appear to be any hope of obtaining goods.

Bergamot oil has appeared in this market from Brazil and, according

to reports, some lemon, peppermint and orange has arrived. The domestic peppermint crop has been making considerable progress especially in Michigan, the only production area not reported on in the official crop report. Little is said regarding the progress of spearmint, tansy, pennyroyal, and erigeron.

ESSENTIAL OIL PRICE DEVELOPMENTS

Price developments in essential oils included advances in lemongrass, guaiac wood, sandalwood, clove oil, and bois de rose. Despite the shortages of many imported oils and the uncertainty surrounding the future supply of domestic oils, because of labor conditions, it is surprising to note that a great majority of oils are below price ceilings. A decline in oil celery failed to come upon the trade as much of a surprise in view of the large quantities of seed that have been hanging over this market over the past few months. Ceylon citronella has shown a slightly easier trend. Unfortunately the oil is of no interest to makers of synthetic menthol, and citronella from Java, one of the menthol raw materials, remains as scarce as ever.

Trade in vanilla beans was reported as quiet over the past month. It is expected the large cargo of Bourbon beans afloat will arrive in the United States late this month or early September. Virtually all of the new crop of Mexican cut beans have been disposed of. Whole beans are meeting with a fair amount of interest, however, and the quality of the beans has been found satisfactory.

Although several thousand tons of gum arabic are in this market, which is equivalent to about a year's supply, it is quite possible that the market is about nearing a turning point.



A LEADING COSMETICS MANUFACTURER REPORTS:

"We cut down the size of our gift boxes and standard packages to effect an over-all saving of approximately 25% of the paper and cardboard; standardized our window displays and eliminated

all die-cuts, as well as steps, shelves and secondary planes. We also folded all displays in half to save more than 50% of the paper and paperboard normally used."

A BIG PLATE GLASS COMPANY REPORTS:

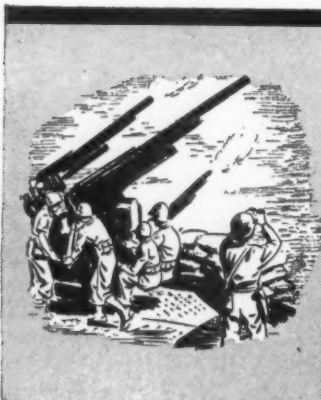
"Our 1944 Color Book was reduced in size and quantity, resulting in a paper saving of 136,000 pounds. Our Color Cards, of which four or five million are used annually, were reduced in size at an approximate reduction of 50% in paper tonnage. We have eliminated our Dealer Sales Portfolio. Our Color Book has become a 'self mailer,' eliminating need for envelopes."

Mr. Manufacturer,
CAN YOU TOP THESE?

The quotations used in this advertisement are from responses to the A. N. A. Committee of Paper Saving.

ONE OF THE TOP LIFE INSURANCE COMPANIES REPORTS:

"In 1944 we will continue to specify lighter weights of paper wherever possible and take all possible steps further to reduce paper tonnage. We are instructing our field offices to scrutinize carefully all requests for printed material and to disapprove all requests for quantities that appear excessive."



A FAMOUS ADDING MACHINE COMPANY REPORTS:

"In advertising and promotion we are using about 30% of the amount of printing and paper used in 1941 — that represents

about 2/3 saving. However, further savings will be effected whenever possible this year as last."

Remember—
**PAPER IS
WAR POWER**



USE LESS—SAVE ALL WASTE PAPER!

This advertisement contributed by this publication and prepared by the War Advertising Council in cooperation with the War Production Board and the Office of War Information.

PRICES IN THE NEW YORK MARKET

[Quotations on these pages are those made by local dealers, but are subject to revision without notice]

ESSENTIAL OILS-

Almond Bit, per lb.	3.50@ 4.00	Cinnamon	12.00@ 15.00	Olibanum	5.00@ 5.75
S. P. A.	4.75@ 5.10	Citronella, Ceylon	.95@ 1.10	Opopanax	25.00@ 38.00
Sweet True	1.50@ 1.75	Java	3.25 Nom'l	Orange, bitter	4.00@ 4.25
Apricot Kernel	.56 Nom'l	Cloves, Zanzibar	1.60@ 1.70	Brazilian	1.35@ 1.50
Amber, rectified	2.25 Nom'l	Copaiba	.85 Nom'l	Calif., exp.	1.75@
Angelica Root	125.00@ 150.00	Coriander	30.00@ 32.00	Orris Root, abs. (oz.)	135.00@
Anise, U. S. P.	3.85@ 4.00	Imitation	12.00@ 14.00	Artificial	36.00@ 40.00
imitation	1.75@ 2.10	Croton	3.75@ 4.00	Pennyroyal, Amer.	4.00@ 4.10
Aspic (spike) Span.	3.75@ 4.00	Cubebs	5.25 Nom'l	European	4.00 Nom'l
Avocado	.90@ .95	Cumin	8.25@ 10.00	Peppermint, natural	7.50@
Bay	1.45@ 1.70	Dillseed	5.50 Nom'l	Redistilled	8.05@
Bergamot	25.00 Nom'l	Erigeron	2.25@ 5.00	Petitgrain	1.70@ 2.00
Brazilian	10.00@ 10.25	Eucalyptus	1.55 Nom'l	Pimento	5.25@ 8.00
Artificial	4.00@ 9.25	Fennel, Sweet	4.00 Nom'l	Pinus Sylvestris	4.25@ 5.00
Birch, sweet	3.35@ 5.25	Geranium, Rose, Algerian	13.00@ 15.00	Pumillanis	4.25 Nom'l
Birchtar, crude	2.25 Nom'l	Bourbon	15.00@ 16.10	Rose, Bulgaria (oz.)	25.00@ 32.00
Birchtar, rectified	4.25 Nom'l	Turkish	4.75@ 5.80	Synthetic, lb.	45.00@ 55.00
Bois de Rose	5.10@ 5.35	Ginger	21.00@ 22.00	Rosemary, Spanish	2.00@ 2.10
Cade, N. S. P.	1.00@ 1.25	Guaiac (Wood)	4.00@ 4.80	Sage	5.85@ 6.50
Cajeput	2.25@ 3.00	Hemlock	1.50 Nom'l	Sage, Clary	35.00 Nom'l
Calamus	22.50@ 35.00	Substitute	.55@ .60	Sandalwood, East India	7.00 Nom'l
Camphor "white," dom.	.35@ .45	Juniper Berries	12.50@ 16.00	Sassafras, natural	1.85@ 2.10
Canada, native	11.50@ 14.00	Juniper Wood, imitation	.75@ .80	Artificial	1.00@ 1.50
Rectified	15.00@ 19.00	Laurel	5.00 Nom'l	Snake root	12.00 Nom'l
Caraway	20.00@ 22.00	Lavandin	8.25 Nom'l	Spearmint	4.00 Nom'l
Cardamon	28.00@ 32.00	Lavender, French	10.00@ 12.00	Thyme, red	2.60@ 3.25
Cassia, rectified, U. S. P.	12.00 Nom'l	Lemon, Calif.	3.25 Nom'l	White	3.25@ 5.00
Imitation	3.75@	Lemongrass	1.65@ 1.80	Valarian	40.00 Nom'l
Cedar leaf	1.35@ 1.60	Limes, distilled	7.00@ 7.75	Vetivert, Java	50.00 Nom'l
U. S. P.	2.65@ 3.34	Expressed	11.00@ 11.75	Wintergreen	5.25@ 8.50
Cedar wood	.85@ .95	Linaloe	3.65@ 4.00	Wormseed	5.25 Nom'l
Celery	20.00@ 24.00	Lovage	95.00 Nom'l	Ylang Ylang, Manila	38.00 Nom'l
Chamomile	150.00 Nom'l	Marjoram	7.25@ 7.50	Bourbon type	18.00@ 20.00
		Neroli, Bigarde P.	300.00@ 375.00		
		Petale, extra	275.00@ 340.00		

(Continued on page 97)

YOU CAN DEPEND NOW AS ALWAYS ON SHERWOOD'S
CONSISTENTLY HIGH QUALITY AND PERSONALIZED ATTENTION

white
oils

petrolatums
ceresines, white and yellow

SHERWOOD REFINING COMPANY, INC.

THE REFINERY OF CONTROLLED SPECIALIZATION

ENGLEWOOD, N. J.

Refinery: — WARREN, PA.

PROFESSIONAL SERVICE

CHARLES S. GLICKMAN

and Associates

CONSULTING CHEMISTS

Industrial Protective Creams... Synthetic Waxes and Esters... Raw Material Substitutes

39 West 38th St., N. Y. C., Wis. 7-8671

GEORGE W. PEGG Ph. C.

Consultant

Cosmetics—Drugs—Industrial Alcohol—Flavoring Extracts
Labeling—Advertising—Formulas

152 W. 42nd St., N. Y. 18, N. Y. Tel.: Wisconsin 7-3066

Washington address: 2121 Virginia Ave., N.W.,
Washington 7, D.C., c/o Dr. George W. Hoover

FIFTH AVENUE PROTECTIVE ASS'N

220 Fifth Avenue, New York City

38 Years of RESULT PRODUCING Service Proves
Our Worth

The "TRADES" Recognized CREDIT and
COLLECTION AGENCY.

CLASSIFIED ADVERTISEMENTS

The rates for advertisements in this section are as follows:
Business Opportunities, \$1.00 per line per insertion. Situations Wanted and Help Wanted, 50c per line per insertion. Please send check with copy. Address all communications to THE AMERICAN PERFUMER, 9 East 38th St., New York.

BUSINESS OPPORTUNITY

WANTED: 2—Dry Powder Mixers; 2—Pony Mixers; 2—Tablet Machines; 1—Filter; 3—Kettles; 2—Filling Machines. No dealers. Write Box 2353, The American Perfumer and Essential Oil Review.

Lines Wanted

West African Distributor serving the cosmetics, soaps, perfumes and flavors trade in West Africa is prepared to negotiate for Co-operative Export Selling Agency. Can handle twelve assorted manufactures. Remuneration by salary and bonus. Address your correspondence to Olayimika Fasanya, 14, Artesian Road, Bayswater, London, W.2.

NAILING MACHINE WANTED: We want used Morgan or Doig wood box Nailing Machines at once. State make, size, best cash price. Chas. N. Braun Machinery Co., Fort Wayne, Indiana.

OLD ESTABLISHED CANADIAN distributor of raw materials, covering all of Canada with warehouses in Montreal and Toronto desires to represent progressive American manufacturers of essential oils, perfume bases, aromatics, white oils, lanolin, flavors and allied products. Will handle non competing lines only. Can give unusual service. H. L. Blachford Ltd., 977 Aqueduct St., Montreal, Canada.

What's your trouble? Cosmetic Chemist long experience can Help you. Creams, Lotions, Perfumes, Beauty Supply Products. Tell me what you want and I will send you finished samples and price of formulas before you buy. Cosmetic Chemist—611-705 Olive Street, St. Louis 1, Missouri.

SITUATION WANTED

CHEMICAL ENGINEER—Draft deferred, can obtain WMC release. Eight years' experience in Cosmetic plant management. Work included production and manufacturing. Packaging and bottling. Purchasing and inventory control. Seeking similar position where this background can be used to maximum mutual benefit. Write Box 2492, The American Perfumer and Essential Oil Review.

HELP WANTED

PERFUMER—Large manufacturer of Perfume Oils and related products interested in service of good, creative perfumer. No novice need apply. Replies held strictly confidential. Right party can command a good salary. Write Box 2491, The American Perfumer and Essential Oil Review.

Wanted—the Woman's Viewpoint

A large manufacturer of nationally advertised brands desires the services of a cosmetic stylist for creating new products. Excellent position and opportunity. Include details of background and experience with your first communication. Letters will be handled confidentially.

Write Box 2493

The American Perfumer and Essential Oil Review

9 E. 38 St., New York 16, N. Y.

W.M.C. Rules Observed

BUY WITH CONFIDENCE - GET WITHOUT DELAY

- 2—Day Auger type Powder Fillers.
- 1—Pneumatic Scale 6 head, automatic Capper, m.d.
- 2—Karl Kiefer rotary 18 spout hand Fillers.
- 1—Semi-automatic Labeling Machine.
- 1—Pneumatic Scale Talcum Powder Filler and Cappers. Unit complete.
- 4—Monel Open Tanks, 25 gal.
- 3—Dry Powder Mixers, from 50 to 2000 lbs.
- 20—Aluminum, Copper, Glass Lined, jacketed and agitated Kettles.
- 1—Abbe Blutergess sifter #2.
- 2—Colton #3 Toggle Presses.
- 3—Stokes Steam Water Still, 3, 10, 25 gal. per hour.

Only a partial listing. Send us your inquiries.



We buy and sell from a Single Item to a Complete Plant

CONSOLIDATED PRODUCTS CO., INC.

14-15 Park Row, New York, N. Y., Shops: 335 Doremus Ave., Newark, N. J.

(Continued from page 95)

TERPENELESS OILS

Bay	2.75@	3.00
Bergamot	49.00	Nom'l
Grapefruit	65.00@	
Lavender	28.00	Nom'l
Lemon	40.00@	55.00
Lime, ex.	80.00@	100.00
Distilled	60.00@	67.00
Orange sweet	57.00@	100.00
Peppermint	13.00@	13.25
Petitgrain	3.75@	4.00
Spearmint	5.00@	6.00

DERIVATIVES AND CHEMICALS

Acetaldehyde 50%	1.90@	2.75
Acetaphenone	1.60@	1.75
Alcohol C 8	7.50	Nom'l
C 9	14.00	Nom'l
C 10	7.75@	12.00
C 11	11.50	Nom'l
C 12	7.20@	8.50
Aldehyde C 8	22.50@	28.00
C 9	32.00	Nom'l
C 10	22.00@	29.00
C 11	22.00	Nom'l
C 12	25.00@	30.00
C 14 (so called)	9.25@	9.75
C 16 (so called)	7.65@	8.25
Amyl Acetate	.50@	.75
Amyl Butyrate	.90@	1.10
Amyl Cinnamate	4.50@	5.80
Amyl Cinnamate Aldehyde	2.75@	5.00
Amyl Formate	1.00@	1.75
Amyl Phenyl Acetate	3.75@	4.00
Amyl Salicylate	.85@	1.00
Amyl Valerate	2.10@	2.75
Anethol	2.75@	2.85
Anisic Aldehyde	3.15@	4.00
Benzophenone	1.15@	1.30
Benzyl Acetate	.65@	1.00

Benzyl Alcohol	1.25@	2.00
Benzl Benzoate	1.10	Nom'l
Benzyl Butyrate	2.25@	3.00
Benzyl Cinnamate	5.15	Nom'l
Benzyl Formate	2.50@	3.00
Benzyl-Iso-eugenol	10.25	Nom'l
Benzylidenacetone	2.25@	3.40
Borneol	1.80	Nom'l
Bornyl Acetate	2.00	Nom'l
Bromstyrol	5.00	Nom'l
Butyl Acetate	.11@	14 1/2
Cinnamic Acid	3.75@	4.50
Cinnamic Alcohol	3.75@	4.00
Cinnamic Aldehyde	1.75	Nom'l
Cinnamyl Acetate	10.40@	12.00
Cinnamyl Butyrate	12.00@	14.00
Cinnamyl Formate	10.00@	13.00
Citral, C. P.	3.85@	4.25
Citronellol	6.50@	7.00
Citronellyl Acetate	8.60@	9.20
Coumarin	3.00@	3.50
Cuminic Aldehyde	8.00@	11.25
Diethylphthalate	.24	Nom'l
Dimethyl Anthranilate	4.55@	5.00
Ethyl Acetate	.25	Nom'l
Ethyl Anthranilate	5.50@	7.00
Ethyl Benzoate	.90@	1.15
Ethyl Butyrate	.75@	.90
Ethyl Cinnamate	3.25@	3.75
Ethyl Formate	.60@	1.00
Ethyl Propionate	.80	Nom'l
Ethyl Salicylate	.90@	1.00
Ethyl Vanillin	5.25@	6.00
Eucalyptol	2.75	Nom'l
Eugenol	2.90@	3.25
Geraniol, dom.	5.00@	6.00
Geranyl Acetate	4.00	Nom'l
Geranyl Butyrate	8.20@	8.50
Geranyl Formate	9.25@	10.00
Heliotropin, dom.	6.00	Nom'l
Hydrotopic Aldehyde	15.00@	18.00

Hydroxycitronellal	7.75@	10.00
Indol, C. P.	23.00@	26.50
Iso-borneol	1.00@	1.10
Iso-butyl Acetate	1.25@	2.00
Iso-butyl Benzoate	1.50@	2.60
Iso-butyl Salicylate	2.70@	3.00
Iso-eugenol	4.00@	4.85
Iso-safrol	3.00	Nom'l
Linalool	7.50@	8.00
Linalyl Acetate 90%	7.00@	8.75
Linalyl Anthranilate	15.00@	
Linalyl Benzoate	10.50@	
Linalyl Formate	9.00@	12.00
Menthof, Brazilian	16.50@	
Methyl Acetophenone	1.80	Nom'l
Methyl Anthranilate	2.75@	3.00
Methyl Benzoate	.70@	1.10
Methyl Cellulose, f.a.b. ship-		
ping point	.60	Nom'l
Methyl Cinnamate	2.50@	3.75
Methyl Eugenol	3.50@	6.75
Methyl Heptenone	3.25	Nom'l
Methyl Heptene Carbonate	40.00@	60.00
Methyl Iso-eugenol	5.85@	10.00
Methyl Octine Carbonate	24.00@	30.00
Methyl Paracresol	2.50	Nom'l
Methyl Phenylacetate	3.75@	4.00
Methyl Salicylate	.35@	.38
Musk Ambrette	9.50	Nom'l
Ketone	4.50@	9.70
Xylene	1.65@	2.50
Neroline (ethyl ether)	2.00@	3.15
Paracresol Acetate	2.50@	3.00
Paracresol Methyl Ether	2.60	Nom'l
Paracresol Phenyl-acetate	6.50@	8.50
Phenylacetaldehyde 50%	3.00@	3.35
100%	4.50@	5.00
Phenylacetic Acid	3.00@	3.75
Phenylethyl Acetate	2.50@	4.10
Phenylethyl Alcohol	2.50@	3.00

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René Forster Company

Fine Aromatic Chemicals

Essential Oils

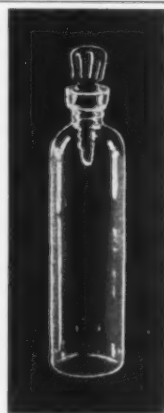
Specialties

404 Fourth Ave. New York 16, N.Y.

Murray Hill 5-0250

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(Continued from page 97)

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Phenyl Formate	12.50@	18.00
Phenyl Valerianate	16.00@	17.50
Phenylpropyl Acetate	8.00@	10.00
Santalol Acetate	20.00@	22.50
Scatol, C. P. (oz.)	5.35@	6.00
Styrolol Acetate	2.50@	3.00
Styrolol Alcohol	9.25@	12.00
Vanillin (clove oil)	2.60	Nom'l
(guaiacol)	2.35	Nom'l
Lignin	2.35	Nom'l
Vetivert Acetate	25.00	Nom'l
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Beta	15.00	Nom'l
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Tanka Beans, Surinam	.70@	.95
Angostura	2.40@	2.75
Vanilla Beans		
Mexican, whole	8.75@	9.25
Mexican, cut	7.75@	8.25
Bourbon	9.50@	10.50
Tahiti	3.75@	4.00

SUNDRIES AND DRUGS

Acetone	.81/2@	.09
Almond meal	.25@	.35
Ambergris, ounce	13.50@	18.50
Balsam, Copaiba	.60@	.75
Peru	1.00@	1.10
Beeswax, bleached, pure		
U. S. P.	.59	Nom'l
Yellow, refined	.53 1/2	Nom'l
Bismuth, subnitrate	1.20@	1.22
Borax, crystals, carlot ton	55.50@	58.00
Boric Acid, U. S. P., cwt.	6.95@	7.55

Calamine	.18@	.20
Calcium, phosphate	.08@	.08 3/4
Phosphate, tri-basic	.09@	.10
Camphor, domestic	.69@	.84
Castoreum	13.00@	17.00
Cetyl Alcohol	1.75	Nom'l
Pure	2.25	Nom'l
Chalk, precip.	.03 1/2@	.06 1/2
Cherry Laurel Water, jug, gal.	3.60@	4.00
Citric Acid	.21	Nom'l
Civet, ounce	22.00@	28.00
Clay, colloidal	.07@	.15
Cocoa Butter, lump	.25 1/2@	.27
Cyclohexanol (Hexalin)	.30@	.50
Fuller's Earth, ton	15.00@	33.00
Glycerin, C. P., drums	.18 1/4@	.18 3/4
Gum Arabic, white	.42@	.45
Amber	.12@	.13 1/2
Powdered, U.S.P.	.19@	.21
Gum Benzoin, Siam	5.00	Nom'l
Sumatra	1.35@	1.40
Gum Galbanum	1.80@	2.00
Gum Myrrh	.50@	.55
Henna, pwd.	.30@	.35
Kaolin	.05@	.07
Labdanum	3.25@	5.00
Lanolin, hydrous	.35@	.36
Anhydrous	.36@	.37
Magnesium, carbonate	.09@	.10 3/4
Stearate	.24@	.27
Musk, ounce	50.00	Nom'l
Olibanum, tears	.18@	.35
Siftings	.11 1/2@	.13
Orange Flower Water, gal.	1.75@	2.25
Orris Root, African, pwd.	1.10@	1.15
Paraffin	.06 1/4@	.09
Peroxide	1.10@	1.75
Petrolatum, white	.06 1/4	.08 1/2
Quince Seed	1.75@	2.00
Rice Starch	.10	Nom'l
Rose Leaves, red	3.45@	4.00
Rose Water, gal.	6.50@	8.00

Rosin, M. per cwt.	6.46@	
Salicylic Acid	.35@	.40
Saponin	2.00@	2.50
Silicate, 40", drums, works,		
100 pounds	.80@	1.20
Soap, neutral, white	.20@	.25
Sodium Carb.		
58% light, 100 pounds	1.35@	2.35
Hydroxide, 76% solid, 100		
pounds	2.60@	3.75
Spermaceti	.26@	.27
Stearate Zinc	.30@	.31
Styrax	1.40@	1.60
Tartaric Acid	.64	Nom'l
Tragacanth, No. 1	4.85@	5.00
Triethanolamine	.34 1/2	Nom'l
Violet Flowers	1.75@	2.00
Zinc Oxide, U. S. P. bbls.	.10 1/2	.10 3/4

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Castor No. 1, tanks	.13@	
Cocanut, Manila Grade,		
c.i.f., tanks	.0835@	
Corn, crude, Midwest, mill,		
tanks	.12 3/4@	
Corn Oil, distilled, drums	.16 1/4@	.16 1/2
Cotton, crude, Southeast,		
tanks	.12 3/4@	
Grease, white	.08 7/8@	
Lard	.1380@	
Lard Oil, common, No. 1		
bbls.	.14@	
Palm, Niger, drums	.0865	
Peanut, blchd., tanks	.15@	
Red Oil, distilled, tanks	.12 1/2@	
Stearic Acid		
Triple Pressed	.18 5/8@	.19 5/8
Double Pressed	.15 7/8@	.16 7/8
Tallow, acidless, barrels	.14 1/4@	
Tallow, N. Y. C., extra	.08 5/8@	
Whale oil, refined	.1232	Nom'l



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The American Perfumer

Production Control and the Analysis of Cosmetics

by MAISON G DENAVARRE, Ph.C., B.S.

*Technical Editor of the American Perfumer & Essential Oil Review
and of Elaboraciones y Envases, Special Lecturer in Cos-
metics, Wayne University, College of Pharmacy, Consulting Chemist*

Sixth Installment

The fifth installment was published in the preceding issue. Subsequent installments will appear in forthcoming issues.

ACKNOWLEDGMENTS

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CHAPTER IV

(continued)

Physical and Chemical Testing Gravimetric and Volumetric Methods

P-54—FOAMING PROPERTIES OF SOAP SOLUTIONS

(R. C. Merrill, Jr., and F. T. Moffett, U. S. Dept. Agriculture, *Oil & Soap*, 21, 170, 1944)

This method measures the rate of drainage of liquid from foam produced in an arbitrary manner. It is a simple, rapid method, requiring only the apparatus shown in figure 72. The foam drainage apparatus (figure 72) is made of Pyrex glass from a 2-liter flask, a 100-ml. graduated cylinder, and a 30-mm. sintered-glass Büchner funnel (Corning medium pore size). Preliminary experiments showed that the rate of drainage of solution from a soap foam varies with the method of producing the foam. For example, foams formed rapidly are drier and lose solution

more rapidly than those formed more slowly. In order to obtain comparative results on different solutions, it is therefore necessary to adopt a standard procedure of producing the foam and measuring its rate of drainage. The following method was adopted for this investigation:

All experiments were performed with the apparatus immersed in a water bath at a constant temperature of 25° C. The apparatus was filled with solution to the 70-ml. mark. Foam was produced by blowing air through the solution for exactly two minutes under a constant pressure of 6.0 cm. of mercury. This air had been passed through glass wool, soda lime, and calcium chloride, and brought to 25° C by passage through a 10-foot copper coil in the water bath before being introduced into the foam

flask. After the air was cut off, readings were taken of the seconds required for the drainage liquid to reach the 10, 20, 30, 40, 50 and 60 ml. graduations. Zero time was

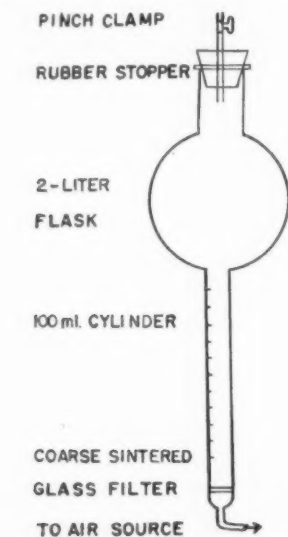


Figure 72. Foam Drainage Apparatus

taken as the time when 70 ml. of liquid remained in the foam. Back pressure to prevent liquid from draining through the filter was maintained by closing a pinch clamp on the inlet tube while air was still being forced through the system.

P-55—FOAM TEST—IN SEA WATER

(O.Q.M.G. No. 100A—January 18, 1944)
(Tentative Specification)

F-4. Add 25 cc of the double-concentrated sea water (F-3b) to 25 ml. Soap Product Sample (20 grams/1000 cc) in a 250 cc glass stoppered graduated cylinder. Adjust to 25°C, stopper, shake vigorously with sharply reversed longitudinal strokes made at the rate of 25 complete cycles in 30 seconds, unstopper, allow to stand 30 seconds and then read net volume of foam (total volume minus liquid volume.)

IN DISTILLED WATER. Repeat above, but use 25 cc distilled water in lieu of the 25 cc double-concentrated sea water.

Double-concentrated sea water (F-3b) is made by dissolving 1.6 grams calcium chloride ($2\text{H}_2\text{O}$) in 400 cc water, adding 11 grams magnesium chloride ($6\text{H}_2\text{O}$), 4 grams anhydrous sodium sulfate and 25 grams sodium chloride. When dissolved, dilute to 500 cc.

P-56—GRIT

(R. H. Auch, *American Perfumer*, p. 246, July, 1933)

A fair idea of the relative amount and coarseness of grit in talc can be obtained by placing portions first of one then the other on the tongue and rubbing the talc between the teeth. A more satisfactory method which is practically quantitative is to run the following flotation test. Pour 250 cc water into a 400 cc beaker and make a mark on the beaker to indicate the water level. Weigh 10 grams of talc into the beaker and fill to the mark with water. Stir vigorously with a stirring rod, then let settle for exactly one minute and pour off the cloudy water.

Repeat this process (usually ten to fifteen times is sufficient) until the supernatant water at the end of the minute can be poured off practically clear. Place the beaker on a steam bath, then in an oven until thoroughly dry. Brush out the settled grit onto a tarred watch crystal and weigh. Calculate to percentage. Three or four tales may be run simultaneously to conserve time.

P-57—HARDNESS

(Courtesy—Hercules Powder Co.)

Sward-Rocker hardness has been tabulated for all lacquers tested. The device, illustrated in figure 73, takes the form of a pair of circular rockers with a pendulum pivoted at the top between the rockers. As the rocker oscillates from side to side, the pendulum indicates the amplitude of the oscillations. The scale is arbitrarily marked at the point where the rocker completes its fiftieth oscillation on a level piece of plate glass. Glass as the standard becomes 100% by multiplying the 50 oscillations by 2. By multiplying the values obtained on lacquer films in the same way, figures are obtained which express the hardness of the film directly in percent of the hardness of plate glass. Panels must be level to assure reproducible results.

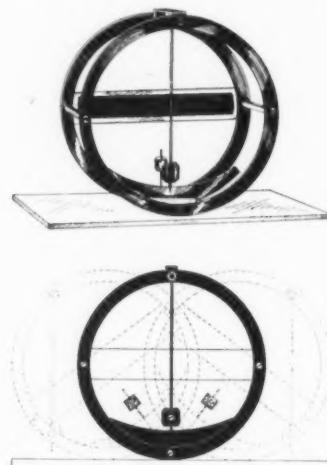


Figure 73. Hardness Meter in Operation. Upper drawing shows hardness meter resting upon polished plate glass that has been coated with varnish. Lower view shows the oscillating action of the hardness meter during the test period.

Hardness is frequently determined by means of the Pfund Hardness Meter, by fingernail or by pencil.

P-58—HENNA, EVALUATION OF

(W. A. N. Markwell-Chem. & Drugg., 122, 157, 1935)

Since henna is used principally for dyeing hair, methods of judging the quality of a sample must have reference to its dyeing properties. The British Pharmaceutical Codex, 1934, describes a test for henna in which white knitting wool is used. The color produced, however, does not compare closely with that produced when human hair is used. The best results were obtained by using pure white fine-drawn mohair. The procedure is as follows: Weigh out 2 gram of white mohair and tie into a hank. Wash first in 0.1 N borax solution, then in distilled water and finally dry in the steam oven. Take 4 gram of henna in a No. 60 powder and mix thoroughly with 20 cc of

boiling water. Immerse the mohair in the mixture and allow to remain for thirty minutes, after which wash the hank thoroughly and then dry in the steam oven. When dry, press the hank between two microscopic slides and secure them in position by means of rubber bands slipped over the ends. Match the color in the B. D. H. Lovibond tintometer, using the artificial light attachment and by reflected light normal to the surface at 90°.

P-59—HIDING POWER

(Brush-Out Method)

Make an easy flowing mixture of the face powder and an oil such as boiled linseed oil. A fixed weight is brushed out on a standard hiding power board and the degree of covering is compared to some standard.

In another method, enough paint is used to completely cover the standard hiding power board. The weight of paint so used then becomes an index to the covering power.

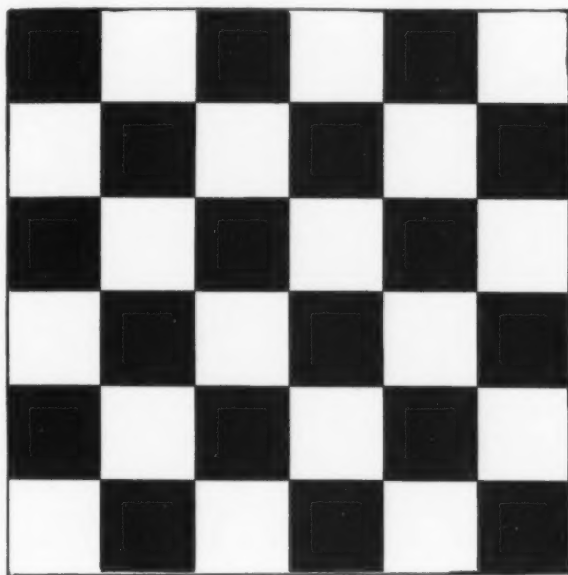


Figure 74. Gardner Hiding Power Board, 2 feet square.

In actual paint work, a 2 square foot board (Figure 74) is used. The hiding power is computed from the following formula:

$$\frac{\text{Pounds of paint per gallon} \times 907.2}{\text{Grams of paint applied to 2 square feet}} = \text{Hiding Power (square feet/gallon)}$$

In cosmetic work, the brush-out method (Figure 74-a) requires considerable elaboration to work properly. A better method for comparative hiding power is the use of the Cryptometer or a Film-O-Graph.

P-60—HIDING POWER

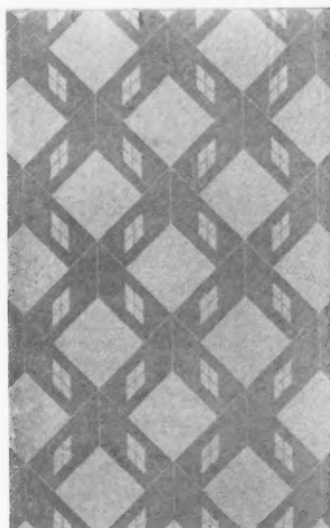
(Film-O-Graph Method)

Make an easy flowing mixture of face powder and a vehicle such as clear lacquer or boiled linseed oil. Using a standard hiding power board such as Figure 75 place a tube style Film-O-Graph on the surface, partly fill with the mixture under test and move toward the operator



Figure 74a. Brushout method using New Jersey Zinc Company Standard Hiding Power Board.

The area of this design is one square foot.



Courtesy, New Jersey Zinc Company

Figure 75. Standard Covering Power Board.



Courtesy, Titanium Pigment Corporation
2% 3 1/2% 5% 7%

Figure 76. Brushouts of 2%, 3 1/2%, 5% and 7% pure titanium dioxide, on gray background. Film thickness, 0.003 inches.

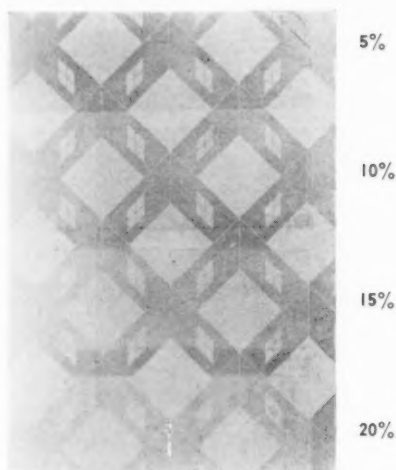
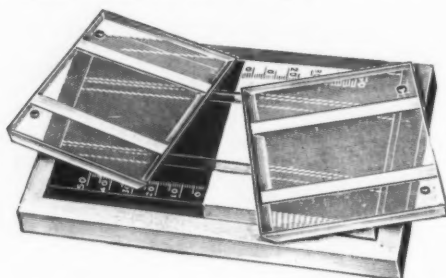


Figure 77. New Jersey Zinc Company brushouts of zinc oxide in 5, 10, 15 or 20% hiding power of various concentrations of zinc oxide.

over the surface to get a thin uniform stripe. Several stripes may be made beside each other for visual comparison of hiding power. Figure 76 shows hiding power of increasing amounts of titanium dioxide and Figure 77 shows the effect of increasing amounts of zinc oxide.

P-61—HIDING POWER USING A PFUND CRYPTOMETER

Adapted from the paint industry, the cryptometer illustrated in Figure 78 is used to show the degree of covering on both white and black surfaces. The instrument gives readings in from 3 to 5 minutes, using a suspension of the substance under test in some bland oil or other suspending agent. For face powder and other cosmetics having covering power, a suspension may be made in a solvent such as mineral oil or water.



Courtesy, Eberbach & Son Co., Inc.
Figure 78. Pfund-Cryptometer

The cryptometer consists of two plates of glass whose optically flat surfaces are separated by a fixed angle in which a wedge-shaped film of paint is formed. The bottom plate of glass is opaque and is fitted with a convenient arrangement for determining and measuring the thickness of the film of paint necessary to hide an underlying surface completely. Where the layer of paint has sufficient thickness, the background will be completely hidden. By sliding the top plate back and forward, a sharp line of demarcation (showing the point of complete hiding) alternately appears and disappears.

The bottom of this plate is made up of 2 pieces of opaque glass cemented together. Hiding power of all paints may be measured. Two top plates with wedge constants of .0007 and .0002 are furnished.

P-62—HUMIDITY

Air always contains a certain amount of water in it. Air moisture is referred to as *humidity*. *Absolute humidity* is weight (in grams) of the water vapor (per cubic meter) actually present in the air. Absolute humidity is also expressed as grains per cubic foot.

The *relative humidity* is usually measured by a wet and dry bulb thermometer. It is calculated from the difference between the temperature of an uncovered ordinary thermometer kept alongside of a similar thermometer, the bulb of which is covered with a cloth wick, kept wet constantly. If the air is saturated with moisture as on a very damp or humid day, evaporation from the wet wick will

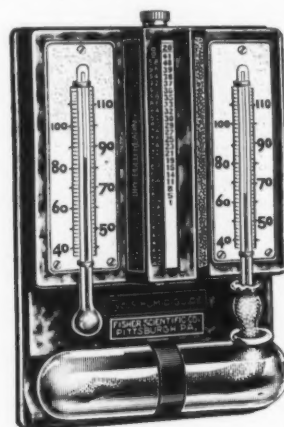


Figure 79. Hygrometer, Humidiguide, a self-contained instrument for measuring the relative humidity. The dry-and-wet-bulb thermometers are read, their reading subtracted from each other and the difference referred to the rotating table found on the center of the instrument. The figure opposite the dry-bulb reading is the per cent of relative humidity. Thus, handbook tables, etc., are eliminated. This new device was originally described in "The Laboratory," Volume IV, Number 1.

The case is molded Bakelite which cannot warp and is not affected by laboratory fumes. A means is provided in the rear for suspending the instrument on the wall.

be nil. If the air is dry, evaporation will be great, resulting in a lowering of the temperature of the wick wetted thermometer. The relative humidity is calculated from the difference in temperature of the two thermometers by referring to tables accompanying the usual hygrometer such as that in Figure 79.

P-63—INSOLUBLE IMPURITIES (IN OILS AND FATS) (A.O.C.S.)

Dissolve the residue from the moisture and volatile matter determination (P-89) by heating it on a steam bath with 50 cc of kerosene. Filter the solution through a Gooch crucible properly prepared with asbestos, wash the insoluble matter five times with 10 cc portions of hot kerosene, and finally wash out the residual kerosene thoroughly with petroleum ether. Dry the crucible and contents to constant weight as in the determination of moisture and volatile matter and report results as Insoluble Impurities.

Note: For routine control work, filter paper is sometimes more convenient than the prepared Gooch crucible, but it must be very carefully washed, especially around the rim, to remove the last traces of fat.

This determination, the title for which was adopted

after careful consideration, determines the impurities which have generally been known as dirt, suspended matter, suspended solids, foreign solids, foreign matter, etc. The first solvent recommended by the Committee is hot kerosene to be followed by petroleum ether kept at ordinary room temperature. Petroleum ether, cold or only slightly warm, is not a good fat and metallic soap solvent, whereas hot kerosene dissolves these substances readily, and for this reason the Committee has recommended the double solvent method so as to exclude metallic soaps, which are determined below as soluble mineral water.

P-64—INDICATORS FOR VOLUMETRIC DETERMINATIONS

(U.S.P.)

Indicator test solutions are likely to be injured by exposure to light, therefore, they must be kept protected from the light, in amber colored, stoppered bottles.

Unless otherwise stated, each indicator solution should be so adjusted that when 0.15 cc of the indicator solution is added to 25 cc of distilled water, 0.25 cc of fiftieth-normal acid, or alkali, respectively, will develop the characteristic color changes.

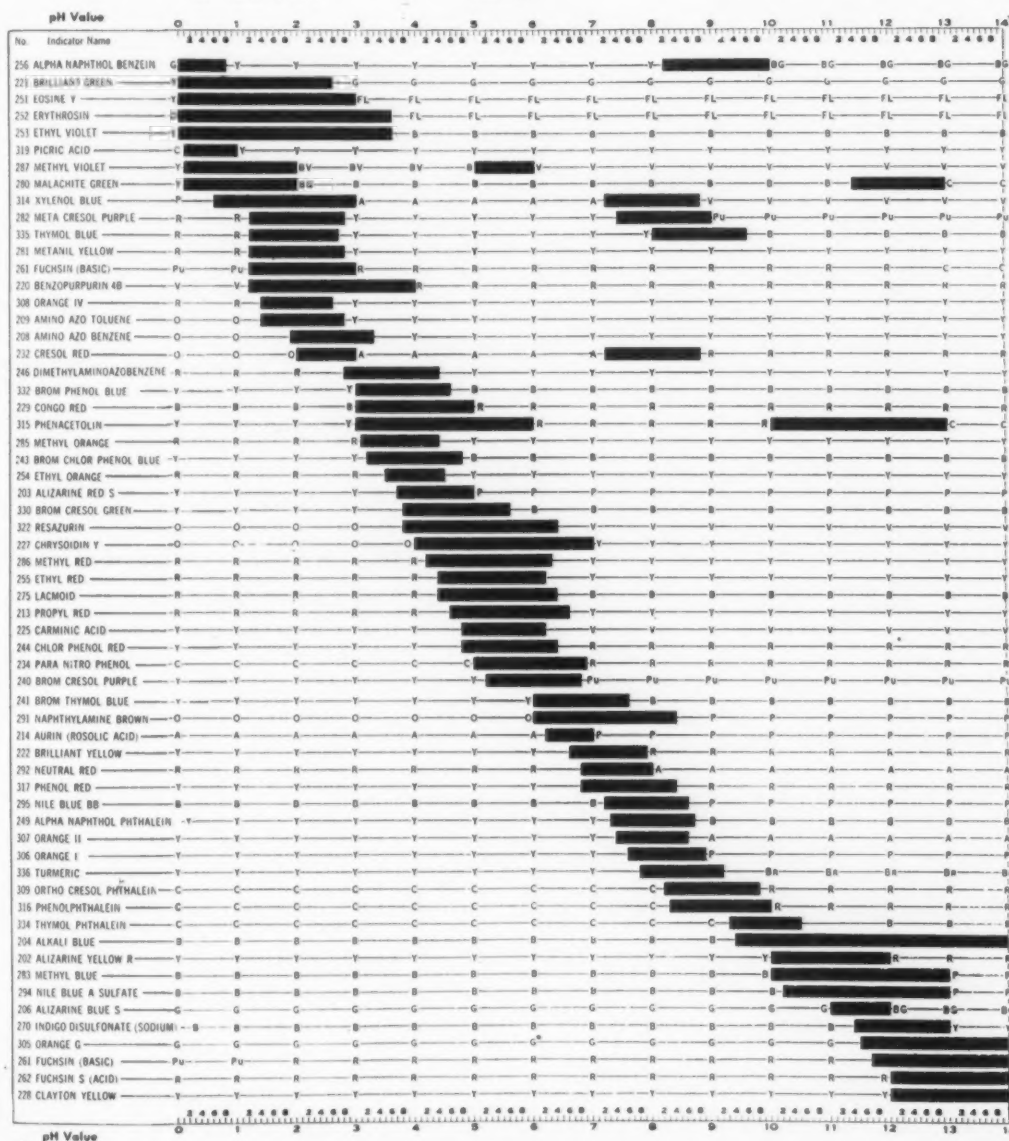
HYDROGEN ION INDICATOR CHART RANGES AND COLOR CHANGES OF NATIONAL ANILINE & CHEMICAL COMPANY'S ORGANIC CHEMICAL INDICATORS

The Abbreviations used are as follows:

A—Amber
B—Blue
BG—Blue Green
Br—Brown
BV—Blue Violet

C—Colorless
FL—Fluorescent
G—Green
O—Orange
P—Pink

Pu—Purple
R—Red
V—Violet
Y—Yellow



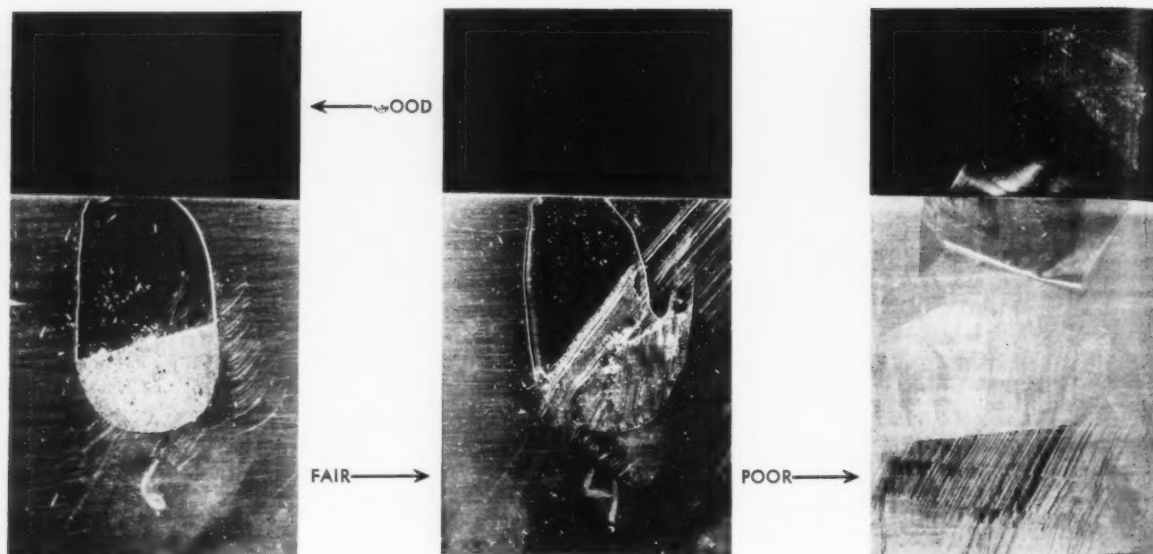


Figure 80. Illustrating Degrees of Adhesion.

Courtesy, Hercules Powder Company

Bromophenol Blue Test Solution—Dissolve 0.10 gm of bromophenol blue in 100 cc of 50 per cent alcohol and filter if necessary.

Bromothymol Blue Test Solution—Dissolve 0.10 gm of bromothymol blue in 100 cc of 50 per cent alcohol and filter if necessary.

Methyl Orange Test Solution—Dissolve 0.10 gm of methyl orange in 100 cc of distilled water and filter if necessary.

Methyl Red Test Solution—Dissolve 0.10 gm of methyl red in 100 cc of alcohol and filter the solution if necessary. This indicator is especially useful in titrating ammonia, weak bases, and alkaloids, but is unsuited for the titration of weak organic acids.

Phenolphthalein Test Solution—Dissolve 1 gm of phenolphthalein in 100 cc of alcohol. This indicator is especially well suited for the titration of weak acids. It functions well in alcoholic solution. It is unsatisfactory for use with alkaloids, ammonia, carbonates, and bicarbonates. Transition interval: from 8.0 to 9.3 pH. Color changes from colorless to red.

P-65—IRRITATION (CREAM SUNBURN PREVENTIVE)

(O.Q.M.G. No. 102—Oct. 11, 1943)

(Tentative Specification)

F-3e. Irritation. A patch test is conducted on the skin of the back of at least 100 individuals. A portion of sample is impregnated in a gauze patch covered with cellophane and adhesive plaster. Such a patch is applied twice to the skin of the back of each of at least 100 individuals at an interval of one to two weeks. Cream will be considered irritant if the skin of more than three per cent of the individuals on whom test is made show a positive reaction to cream under test.

P-66—IRRITATION (DERMATITIS TEST)

(O.Q.M.G. No. 100A—January 18, 1944)

(Tentative Specification)

D-3. Fifty human test subjects will be used, and each

will be patch-tested with the following:

1 cc of a 0.25% concentration of soap in distilled water will be absorbed into a 1-inch square test patch consisting of 4 layers of white cotton muslin. These pieces, while wet, will be applied to the inner surfaces of the forearm and covered over by an occlusive protective coat which will prevent the evaporation of water. The tests will be worn for a period of 48 hours with interpretation of the irritation results being made at the end of each 24-hour period. The site on which the material is used will be plainly marked, and the tests will be repeated on the same individual after a period of two weeks. Erythema or induration at the site of the patch will be considered as evidence of irritating properties in the soap. Not over 14% of the test subject shall show induration, urticaria or erythematous reactions.

P-67—LACQUER COMPATIBILITY

Apply a uniform film to a plastic or glass surface. Allow to dry and while drying watch for appearance of haze. After the film has been dry for 15 or 30 minutes, again look for haze. If a haze is apparent, it denotes incompatibility.

P-68—LACQUER ADHESION

(Courtesy—Hercules Powder Co.)

Adhesion to the 4 basic surfaces is fundamentally very important. Therefore, considerable space is devoted to a description of how each surface is treated prior to application of the test films and the technique employed in determining adhesion.

Copper: Copper sheeting is washed in clean toluene and air dried. It is then scrubbed with solid sodium chloride wetted with 1% acetic acid solution, washed thoroughly with tap water, and air dried. This treatment removed all tarnish.

Cellophane: The cellophane is a special sample obtained specifically for this work. It is not moistureproofed or coated with any material. Likewise it has not been treated with glycerine. The supply roll is stored in a

closed container in the presence of an ample supply of calcium chloride confined in an open bottle out of contact with cellophane. Spot films are applied to this material as received.

Cow's Hoof: A cleaned uniform, air dried hoof is used.

Glass: Plate glass was obtained from Pittsburgh Glass Company. It was washed with soap and water, rinsed in tap water until free of soap and air dried.

ADHESION TEST (SEE FIGURE 80)

With the exception of cellophane, adhesion tests are carried out by cutting the film from the surface with a sharp blade held at an acute angle to the surface (Gem razor blade in holder). The procedure employed for examining films on cellophane is described later. Classifications are made as follows:

Poor adhesion-film could be stripped from the surface cleanly.

Fair adhesion-film stuck to the surface in a few places so that after cutting the film away there still remained a few fragments clinging to the surface.

Good adhesion-film could not be cut cleanly from the surface in even tiny patches.

Brittleness or flexibility of the film influence adhesion results. Numerous examples will be found of flexible films which possessed good adhesion and likewise numerous examples of brittle films which exhibited poor adhesion.

CELLOPHANE ADHESION TEST

The technique used in obtaining adhesion to cellophane is as follows: The cellophane is cut into squares with scissors, each square containing a lacquer spot film in the center. Two parallel scissor cuts are then made about $3/16$ in. apart in the cellophane until each cut intersected the spot film about $1/4$ in. With the spot film uppermost, the cellophane strip is torn out of the cellophane square. Classification is as follows:

Good adhesion-film torn so that the torn edges coincided exactly with the torn cellophane edges.

Fair adhesion-film separated sufficiently from the cellophane so that there was a clear differentiation between the torn edges of the lacquer film and cellophane.

Poor adhesion-film separated easily in large sections from the cellophane, the tears in the film and cellophane bearing no relationship with each other.

Each film on its cellophane support was bent double between the finger, and those which cracked under this test were simply noted as being brittle.

P-69—LACQUER—FLEXIBILITY AND ELONGATION

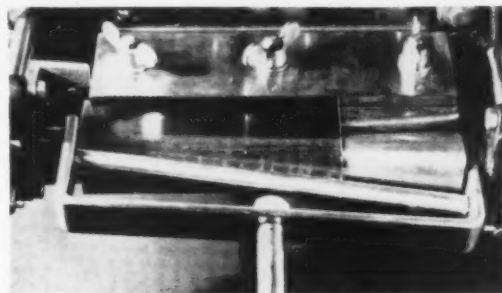
(Courtesy—Hercules Powder Co.)

The Conical Mandrel test developed by the Bell Telephone Laboratories for measuring distensibility of films attached to metal panels is used to obtain:

- (1) Flexibility of films.
- (2) Adhesion of the film over the bend area of the metal panel.
- (3) Approximate elongation of the film.

The apparatus illustrated in Figure 81 shows the position of a coated panel being bent by the drawbar. Note the cracks in the film from end to end. Directions supplied with the instrument give curves which correlate percent elongation with the diameter of the cone at any

point along the axis of the cone. For example, the smallest diameter of $1/8$ in. corresponds to an elongation of 30%. Five and one-half inches further along the cone,



Courtesy, Hercules Powder Company

Figure 81. Conical Mandrel Apparatus for measuring extensibility and flexibility of films.

the diameter of the cone is $1\ 1/16$ inch and corresponds to an elongation of 3%. Panels of $5\ 1/2$ inches long were used in this work. Therefore, if a film withstood even the sharpest bend without cracking, the degree of elongation of the film was at least 30%. If the film cracked from end to end when bent, the degree of elongation was less than 3%. A film that cracks only part way possessed an intermediate degree of elongation which could be readily determined by referring to the curves, and applying the necessary correction for film thickness, also determined from another set of curves supplied with the instrument.

Many films crack from end to end in the Mandrel test, thus indicating an extensibility of less than 3%, were nevertheless flexible. It became necessary, therefore, to supplement the Mandrel test (Figure 82) in the following manner to obtain a measure of flexibility: A fragment of every film showing less than 3% elongation is bent double between the thumb and forefinger. If the film snaps before it has been bent sharply over on itself it is rated as brittle. A film that withstands being bent double is rated as flexible. All films having an extensibility greater than 3% are rated as very flexible.

Visual inspection indicates whether a film adheres over the bent area. Practically every film with less than 3% elongation shows poor adhesion over the bend. Almost all films with more than 30% elongation shows good adhesion over the bend. Fair adhesion is noted for several films having an intermediate degree of elongation.

P-70—LATHERING

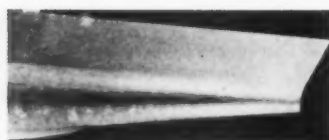
(F.F.F.-C-641—September 23, 1938)

(Federal Standard Catalog)

F-1a. Shake 100 cc of a 0.2 per cent (based on the non-volatile matter) solution of the soap in distilled water at room temperature in a stoppered, 200 cc graduated cylinder 30 times in 15 seconds, and let stand at room temperature for 1 hour. The volume of foam above the liquid shall extend to the top of the cylinder and shall not decrease more than 10 per cent of its original volume in 1 hour.

P-71—THE LATHERING POWER OF SOAPS

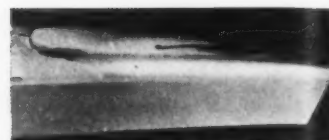
The method used by Das Gupta (Ind. Soap J. 2, 2, 1935) consisted of shaking a standard soap solution under uni-



Brittle, <3% elongation, poor adhesion.



Very flexible, 15.5% elongation, fair adhesion.



Flexible, <3% elongation, poor adhesion.



Very flexible, >30% elongation, good adhesion.



Illustrating how Mandrel test was supplemented to obtain flexibility data.

Courtesy, Hercules Powder Company

Figure 82. Illustrations of various degrees of flexibility, extensibility, and adhesion over bend.

form conditions in a 50 cc stoppered graduated cylinder. Table 7 gives the volume of lather in cc's remaining at intervals of from one to sixty minutes. The abbreviation L.S. indicates that the lather is subsiding.

the liquid is again read off, the difference between the two readings representing the lathering value. "Stiepel's lathering value" indicates what percentage of a soap solution containing 0.6 gm of fatty acid hydrate in 100 cc of water

TABLE 7
CCs of Lather Produced by Different Soaps
Time in Minutes

	1	5	10	15	20	30	60	Remarks
Castor	22.5	19.0	15.5	10.5	8.5	7.0	5.5	Semiclose lasting lather.
Coconut	30.0	L.S.						Profuse open lather, subsides rapidly.
Linseed	22.5	5.0	0.5	L.S.				Semiclose lather.
Olive	11.0	6.0	2.5	1.5	1.5	L.S.		Semiclose lather.
Sesame	24.0	3.5	1.0	L.S.				Semiclose lather, moderately profuse.
Peanut	17.0	13.0	4.5	2.5	1.5	0.5	none	Lather not profuse but closer than olive.
Cottonseed	22.5	4.0	3.0	2.0	1.0	L.S.		Semiclose lather, moderately profuse.
Kapok	11.0	2.0	1.0	L.S.				Lather open but not profuse.
Mowra	22.5	4.5	1.5	1.0	1.0	L.S.		Semiclose lather, moderately profuse.
Palm	30.5	25.5	24.0	23.0	22.0	21.0	18.5	Close lasting lather.
Tallow, mutton	31.0	24.0	22.0	20.5	19.5	18.5	17.0	Close lasting lather.
Tallow, beef	25.0	19.0	17.5	15.5	15.0	14.5	13.0	Close lasting lather.

P-72—STIEPEL'S METHOD FOR THE ESTIMATION OF LATHERING POWER

(K. Pfaff, *Mfg. Chem.* 4, 380, 1933)

The apparatus employed in this method consists of a long-necked flask of about 2 liters capacity, the upper end of the neck being widened out into a 50 cc bulge. The flask (Figure 83) is closed by a ground-glass stopper which has a large flat top. The remainder of the neck is graduated in cubic centimeters (50 cc) and numbered from the bottom. In the case of flasks in the vertical position, the figures are etched in the reverse.

Estimation of lathering value is carried out on solutions of the soap in freshly boiled, distilled water. One hundred cc of the solution are introduced into the flask with avoidance, as far as possible, of any lather formation. The stopper is then inserted and the flask turned upside down and allowed to stand for two minutes in this position prior to reading off the level of the liquid. Subsequently the flask is vigorously shaken for thirty seconds and again allowed to stand in the inverted position. After three minutes, or some other predetermined period, the level of

(e.g., 1 percent curd soap solution or a 1½ percent soft soap solution) is converted into foam after thirty seconds'

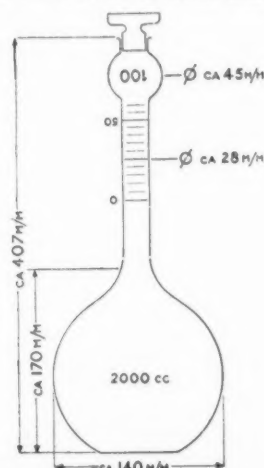


Figure 83. Flask used in the Stiepel method for the estimation of lathering power. Through Manufacturing Chemist

agitation followed by standing for three minutes. A temperature of 17° to 20°C is advisable for the cold test, while the warm test is carried out at 50° to 55°C.

PEAFF'S MODIFICATIONS

(1) Instead of solutions containing 0.6 percent fatty acid, 1 percent solutions of the commercial product being examined are exclusively used, since the purchaser is then in a position to make a direct comparison without reference to the fatty acid content.

(2) Instead of agitation for thirty seconds, which is liable to give variable quantities of foam according to the energy exerted, the flask is inverted thirty times in succession. This procedure can be carried out with much greater uniformity.

(3) Instead of taking the second reading after a specified number of minutes, a series of readings are carried out at intervals ranging from one to ten minutes. Lathering curves are thereby obtained which yield more information than a single pair of readings.

P-73—MASS COLOR OR OVERTONE

Rub together on a frosted or ground glass plate 1 gram of the face powder plus 0.5 gram of white mineral oil, using a 3-inch paint muller (Figure 84) for 100 rubs. Do



Courtesy, Eberbach & Son Co., Inc.

Figure 84. Muller—Glass, Paint Pigment, A.S.T.M. Molded of solid glass with face approximately 3 inches in diameter, finely ground, with rounded edges and knob top. For use in "determining the tinting strength of white pigments or white pigment pastes."

the same with the standard powder sample. Scrape up each mass separately and place alongside each other on a glass slide. Force them together but do not mix so that a line of demarcation can be observed. Smooth down both surfaces simultaneously with a large spatula and observe in good daylight. This will show the similarity of mass color or overtone. A mechanical muller is shown in Figure 85.

P-74—MATTER INSOLUBLE IN DILUTE HYDROCHLORIC ACID (T.G.A. Method No. 14)

1. Accurately weigh about 10 grams of the sample and transfer to a tall form, 500 cc beaker, add 100 cc of cold distilled water and several drops of methyl orange indicator solution.
2. Slowly add a slight excess of concentrated hydrochloric acid. Stir constantly to avoid loss of material by spattering during effervescence.
3. Heat the solution on a steam bath for one-half hour and filter through a tarel Gooch crucible. Wash the filter thoroughly with hot distilled water.
4. Dry the Gooch crucible in an oven at 105°C to constant weight. Cool in a desiccator and weigh.

Calculation:

$$\frac{\text{Weight of the Residue (step 4)} \times 100}{\text{Weight of sample}} = \% \text{ insoluble in Dilute Hydrochloric Acid}$$

P-75—MATTER SOLUBLE IN DILUTE HYDROCHLORIC ACID (T.G.A. Method No. 18)

Dry 7 grams of the sample at 105°C to constant weight. Suspend 5 grams of this material in 100 cc of N/2 hydrochloric acid. Heat on a steam bath with occasional stirring for one-half hour. Filter and wash three times with 10 cc portions of N/2 hydrochloric acid. Evaporate the filtrate to constant weight. Calculate and report as percent acid soluble.

Note: If a clear filtrate is not obtained by usual filtration methods, it is suggested that a Gooch crucible be used in which the mat has been built up in three layers using first medium coarse asbestos, second pulped filter paper and finally fine asbestos.

P-76—MATTER SOLUBLE IN DISTILLED WATER (T.G.A. Method No. 17)

Dry 8 grams of the sample at 105°C to constant weight. Weigh 6.25 grams of this material into a 250 cc beaker, add 50 cc of distilled water, mix thoroughly and allow to stand overnight. Transfer the contents of the beaker to a 125 cc volumetric flask, add 10 cc of 2 percent ammonium chloride solution and mix thoroughly. If the material does not settle add another 10 cc portion of the 2 percent ammonium chloride solution. After the material has settled, add distilled water to the graduation on the flask. Mix thoroughly and filter through double thickness 12.5 cms Whatman filter paper No. 52. Discard the first 10 cc of filtrate. Collect 100 cc of filtrate (equivalent to 5 grams of the sample) in a weighed platinum dish and evaporate on a hot plate, then ignite at dull red heat to constant weight. Calculate and report as percent water soluble.

P-77—MATCHING COLORS WITH A SPECTROPHOTOMETER (G. W. Ingle, Color Laboratory Monsanto Chemical Company)

The intelligent application of spectrophotometry can expedite the preparation of a color-match for an opaque, homogeneously, colored material, such as a plastic or face powder. There are two kinds of color matches; these may be designated "subjective" and "objective". The first describes the color-match usually obtained by traditional visual methods without the benefit of optical measurements. Dependent upon the skill of the color-matcher, and the normalcy of his color vision, the color he obtains by combining dyestuffs perceived as colors will be tolerably equivalent to the colored sample or standard for other similarly normal observers, in the light he uses for his color-matching. Unless the color-match is prepared under at least two selected illuminants, it is possible that his sample and color-match will not match in other light.

The truly "objective" match does not require visual analysis—spectral reflectance curves will suffice to match opaque colors. Their significance lies in the fact that if two opaque materials with the same type of surface can be represented by identical reflectance curves then those materials will match perfectly for *all* observers, color blind or not, and under *all* conditions of illumination and observation.

Occasionally identical curves cannot be obtained because of the unavailability of a necessary dyestuff, or because of a certain requirement which prevents the use of a dyestuff in a particular medium such as toxicity, heat- and light-

fastness, and bleeding. Under these conditions it may be necessary to resort to a "subjective" color-match. But even this process can be expedited with the help of spectropho-

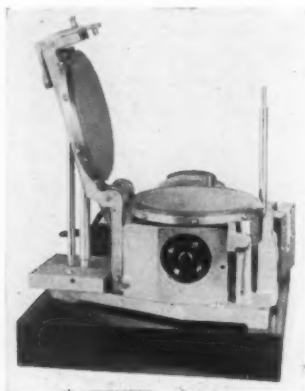


Figure 85. Hoover Mechanical Muller

tometry. By a method of calculation known as Tristimulus Integration, the color of a material of known spectral reflectance can be computed for the I. C. I. "Standard Observer" for a selected illuminant. I. C. I. "Illuminant C," a mathematical representation of northern noon daylight, is frequently used. This process specifies color in terms of dominant wavelength, luminance and colorimetric purity which are related to the more familiar terms of hue, value and chroma*. The colorist knows (from previous tests) how changes in concentration and combinations with other dyestuffs affect the color of each of his useful dyestuffs expressed in these numerical terms. With this information those dyestuffs best suited to match a color sample or standard likewise expressed numerically are selected.

To get the full advantage from a spectrophotometer the colorist files the spectrophotometric curves for individual dyestuffs and colored samples by hue—calculated as dominant wavelength—and further by curve shape. Related to this is a file showing the pertinent behavior of each dyestuff and its chemical constitution.

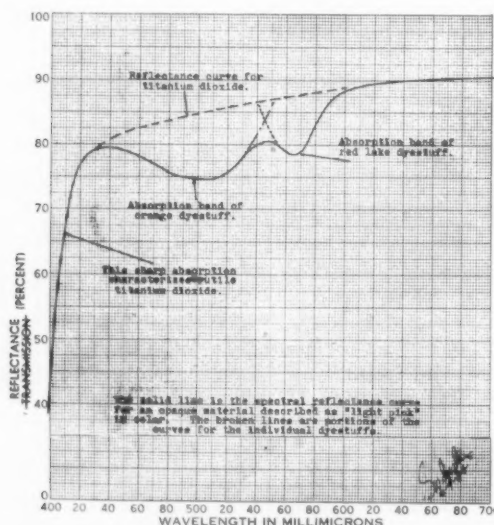


Figure 86. Spectral Reflectance Graph

It may be instructive to follow the colorist's preparation of a color-match for an opaque colored material. The sample to be matched may be a piece of colored paper, a molded plastic, or a colored face powder. The first step is to record the spectral reflectance curve for this sample. Not only does this curve provide a measure of the color desired but it can be used to identify the dyestuffs which must be used. Let us suppose that this curve is shown in Figure 86. Our eyes can tell us only that the color of the sample is light pink, but the curve reveals that this pink is composed of three colorants, a rutile titanium dioxide opacifier, an orange and a red dyestuff. Referring to the file of curves for individual dyestuffs, the colorist narrows his selection to the particular orange and red dyestuffs which when combined will reproduce this curve most exactly. The final choice is determined by the behavior of the dyestuffs—slight variations in chemical constitution may have minor effects upon this spectrophotometric curve but significant connection with the behavior of these dyestuffs.

The proper selection of these dyestuffs minimizes the difficulty of combining them in the correct proportions. If his laboratory can reproduce quickly, inexpensively and faithfully the method of incorporation of the large production scale, successive estimations without involved computation will suffice to determine the proper proportions. Comparison of the curves for these trials indicates quickly and unambiguously the direction and magnitude of necessary changes in concentration.

If greater precision is required, equations are available which relate the reflectance of opaque materials with the absorption and scattering coefficients and concentrations of the component dyestuffs. Nolan has applied the Kubelka-Munk equations in this way to the coloring of paper and Saunderson has extended this technique to plastic materials. Park and Stearns describe general procedures for calculating objective color-matches. In addition, Duntley has derived elaborate equations to describe more accurately these relations. But in industrial practice these involved computational procedures seem to offer no significant advantage over the simple method of successive estimations based upon spectrophotometric measurements of laboratory samples.

After the color-match has been prepared and approved as a standard, actual production of the material may be inspected at each stage by comparison of the spectral-reflectance curves. The use of these curves offers an advantage over visual inspection in that they not only indicate the color difference but also define it unambiguously in terms of the individual colorants. This analysis may be used frequently to indicate the ultimate sources of color variations from batch to batch. Finally, these spectral reflectance curves may be used to specify colors, and applicable color tolerances, acceptable to the customer.

*Regardless of differences in the spectral reflectance curves of two opaque colored materials with the same type of surface, their colors will match to a normal observer if these three variables, calculated for the illuminant used, correspond sufficiently well.

P-78—MELTING POINT OF FATS AND FATTY ACIDS Wiley Method-Official (A.O.A.C.)

Alcohol-water mixture—The specific gravity should be the same as that of fat to be examined. Prepare by boiling,

separately, H_2O and alcohol for 10 minutes to remove gases that may be held in solution. While still hot pour the H_2O into test tube until it is almost half full. Nearly fill test tube with the hot alcohol, pouring it down side of inclined tube to avoid too much mixing. If the alcohol is added after the H_2O has cooled, air bubbles will make mixture unfit for use.

Determination. Allow the melted and filtered fat to fall a distance of 15-20 cm from dropping tube upon piece of ice or upon surface of cold mercury. The disks thus formed should be 1-1.5 cm in diameter and should weigh about 200 mg. Remove disks when solid, and allow to stand 2-3 hours in order to obtain normal melting point.

Place a 30 x 3.5 cm test tube, containing the alcohol-water mixture, in tall 35 x 10 cm beaker containing ice and H_2O , and leave until mixture is cold. Drop disk of fat into tube. It will sink immediately to a point where density of the alcohol-water mixture is exactly equivalent to its own. Lower accurate thermometer, which can be read to 0.1° , into test tube until bulb is just above disk. In order to secure even temperature in all parts of the alcohol-water mixture around disk, stir gently with thermometer. Slowly heat the H_2O in beaker, constantly stirring it by means of air blast or other suitable device.

When temperature of the alcohol-water mixture rises to about 6° below melting point of the fat, the disk of fat begins to shrivel and gradually rolls up into an irregular mass. Lower thermometer until fat particle is even with center of bulb. Rotate thermometer bulb gently and so regulate heat that about 10 minutes is required for last 2° increase in temperature. As soon as fat mass becomes spherical, read thermometer. Remove tube from bath and again cool. Place in bath a second tube containing the alcohol-water mixture. The test tube is of sufficiently low temperature to cool bath to desired point. After first or preliminary determination, regulate temperature of bath so as to obtain a maximum of about 1.5° above melting point of fat under examination.

If edge of disk touches sides of tube, make a new determination. Run triplicate determinations. The second and third results should agree closely.

P-79—MELTING POINT (OILS AND FATS)

(A.O.C.S.)

APPARATUS

Capillary tubes made from 5 mm inside diameter thin-walled glass tubing drawn out to 1 mm inside diameter. Length of capillary part of tubes, about 5 cm; length of tube over all, 8 cm.

Standard thermometer graduated in tenths of a degree. Beaker, 600 cc.

DETERMINATION

The sample when melted should be clear and entirely free from moisture, or incorrect results will be obtained.

Melt and thoroughly mix the sample. Dip three of the capillary tubes in the oil so that the fat in the tube stands about 1 cm high. Fuse the capillary end carefully by means of a small blast flame and allow to cool. Place these tubes overnight in a refrigerator at a temperature of from 4° to $10^\circ C$ (40° to $50^\circ F$), then fasten them by means of a rubber band or other suitable means to the bulb of a thermometer graduated in tenths of a degree. Suspend the

thermometer in a beaker of water (which is agitated by air or other suitable means) so that the bottom of the bulb of the thermometer is immersed to a depth of about 3 cm. Increase the temperature of the water gradually at the rate of about $0.5^\circ C$ ($1^\circ F$) per minute.

Before finally melting to a perfectly clear fluid, the sample becomes opalescent and usually appears clear at the top, bottom, and sides before becoming clear at the center. Continue the heating until the contents of the tube become uniformly clear and transparent. Report this temperature as the melting point. (The melting point of oils may be determined in general according to the above procedure, taking into consideration the lower temperature required). It is usually only a fraction of a degree above the opalescent point noted. The thermometer should be read to the nearest $0.5^\circ C$; this temperature may be reported to the nearest degree Fahrenheit if desired.

A melting point is the temperature at which a solid substance assumes the liquid condition. If the solid is a pure substance in the crystalline condition, the melting point is sharp and well-defined for any given pressure. With increased pressure the melting point is lowered or raised, depending on whether the substance contracts or expands in melting. The lowering or raising of the melting point with pressure is very slight and ordinarily is not taken into consideration. Melting point determinations are commonly carried out under ordinary atmospheric pressures without correction. The general effect of soluble impurities is to lower the melting point, whether the impurity has a higher or lower melting point than the pure substance (solvent). Thus, if a small amount of stearic acid is added to liquid palmitic acid and the solution frozen, the melting point of this solid will be lower than that of palmitic acid. Likewise, the melting point of stearic acid is lowered by the addition of a small amount of palmitic acid. A eutectic mixture results when two components solidify simultaneously at a definite temperature. Such a mixture has a constant melting point, and because of this, and also because both solid and liquid phases have the same composition, eutectic mixtures were formerly looked upon as compounds. The phenomenon of double melting points has been observed in the case of a number of glycerides. Such a glyceride when placed in the usual capillary tube and subjected to increasing temperature quickly resolidifies, only to melt again and remain melted at a still higher temperature. No satisfactory explanation has yet been found.

The presence of water, especially when it is thoroughly mixed or emulsified with a fat or oil, also influences the melting point to a marked extent, causing the mixture to melt through a longer range of temperatures than if the water were absent. This is particularly true of emulsified fats and oils, such as butter and oleomargarine, both of which contain, besides water, the solids naturally present in milk or cream, including casein, milk sugar, and salts. The melting point method recommended by the committee is not applicable to such emulsions or other watery mixtures and the Committee recommends the Bailey-Whitner method described above under Slipping Point, for such work. Not only the amount of water present, but also the fineness of its particles—that is, the state of subdivision and distribution—in a fat or oil causes the softening point or melting point to vary widely in different samples.

Various methods have been devised to determine the so-called melting point of fats and oils. Most of these

methods determine, not the melting point, but the softening point or the flow point of the fat and in the past the great difficulty has been to devise a method which would determine even this point with reasonable accuracy and so that results could be easily duplicated.

It has been the aim of the committee to devise a simple method for the determination of the melting point of fats and oils, but it should be understood that the term "melting point" in the scientific sense is not applicable to natural fats and oils.

P-80—MELTING POINT USING CENCO APPARATUS

Prof. John D. Burchard of the State Teachers College at San Diego, Cal., first suggested in an article in *The Chemist Analyst*, Vol. 19, No. 5, p. 23, 1930, certain improvements, which have been incorporated in the design of the Cenco Melting Point Apparatus, Figure 87.



Figure 87. Melting Point Apparatus

A Thiele-Dennis melting point tube of "Pyrex," provided with an external winding of resistance wire, is mounted by means of spring clips on a support stand of asbestos slate. The winding terminates in brass bands encircling the tube. When the tube is in place, the brass bands make contact with clips from which concealed connections pass to the binding posts to which the source of current is connected. By this ingenious arrangement the tube can be readily removed for cleaning without disturbing the connections.

In use, the heating unit should be connected to a 110-

volt A.C. or D.C. line through a variable rheostat, by means of which the rate of rise in temperature may be closely controlled. A magnifier adjustably mounted on the asbestos slate back facilitates observations.

P-81—MELTING POINT DROPPING METHOD

(A.S.T.M. Designation D566)

This test denotes the temperature at which a grease passes from a semi-solid to a liquid state, under the test conditions, but should not be considered as having any bearing on service performance.

The apparatus (Figure 88) consists of a chrome plated brass cup, test tube with indentations to support the cup

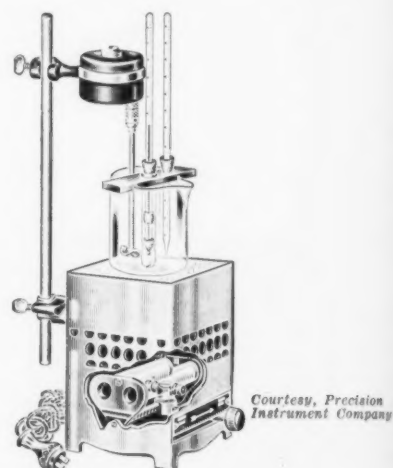


Figure 88. Melting Point, Dropping Method

inside the tube, two A.S.T.M. thermometers, 400 cc beaker, heater, clamps and stirrer.

A smooth film of grease of reproducible thickness is left inside the cup. Cup and thermometer are then inserted into the test tube, as shown, and the test tube suspended in the oil bath, which is heated at a prescribed rate, preferably by an electric heater with control.

When a drop of grease falls from the orifice of the grease cup, the average temperature between test tube thermometer and bath thermometer is recorded as the dropping point. A sufficient number of determinations shall be made so that the average deviation from the mean is 3°F or less. Average results obtained by different operators with different apparatus shall agree within 6°F.

(Chapter IV continues in subsequent issue.)

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